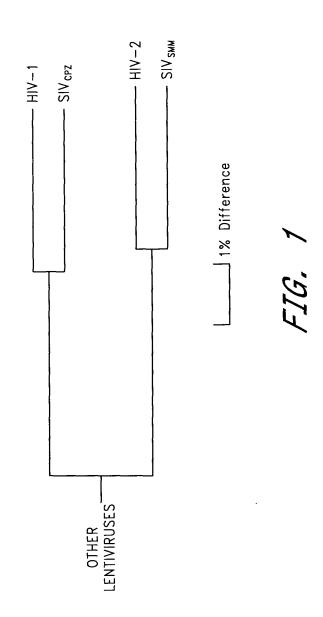
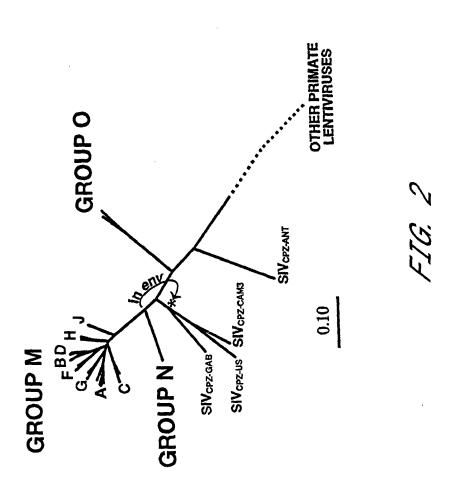
Appl. No.: Unknown

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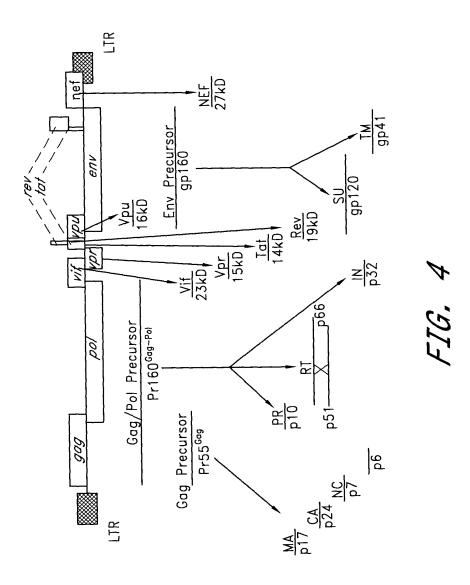
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			{
Syncyfíum-inducing phenotype	++	l	+
REplicative phenotype	Rapid/high	Slow/low	Rapid/high
T-cell-line replication	+	ì	+
Macrophage replication	ſ	+	4
PBMC replication	+	+	+
Chemokine coreceptor used	X X	R5	R5/X4

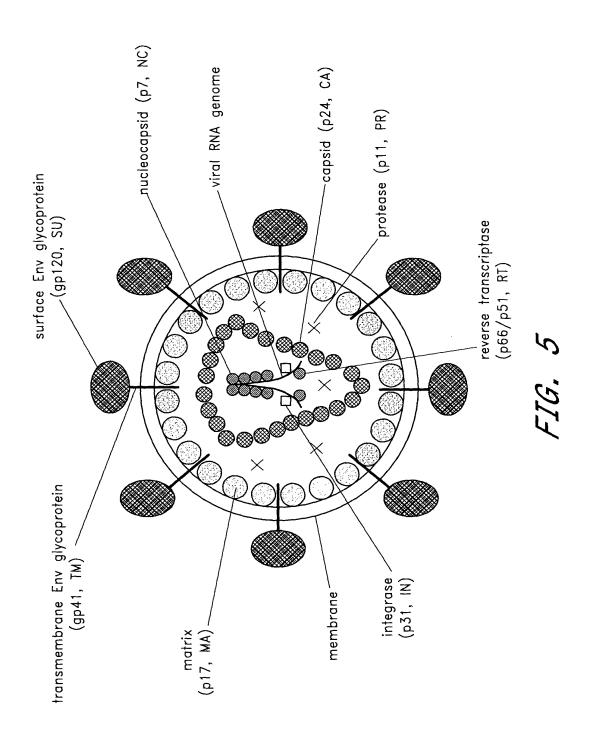
Moss et al.

Appl. No.: Unknown Atty Docket: NIH211.001C1

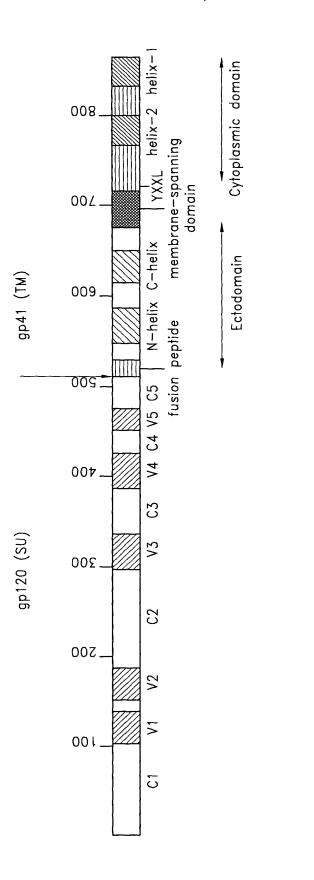
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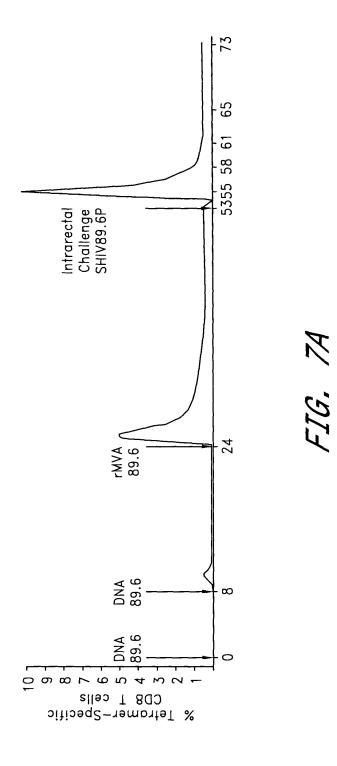


Appl. No.: Unknown Atty Docket: NIH211.001C1



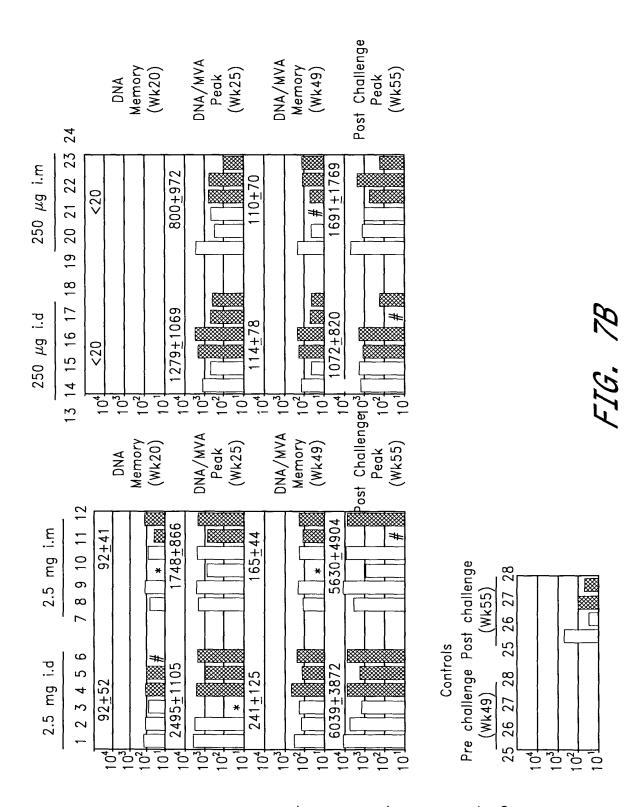
GENES

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Appl. No.: Unknown Atty Docket: NIH211.001C1



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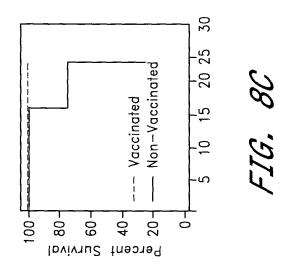
Appl. No.: Unknown Atty Docket: NIH211.001C1

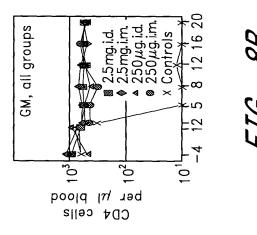


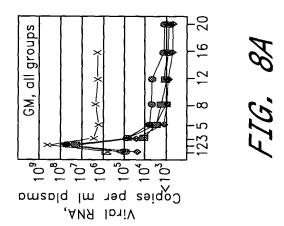
Gag-specific IFN- γ ELISPOTS per million PBMC

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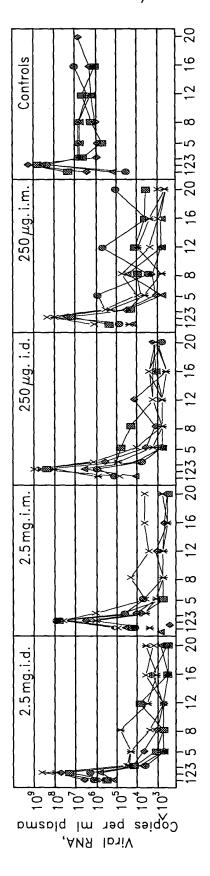


FIG. 8D

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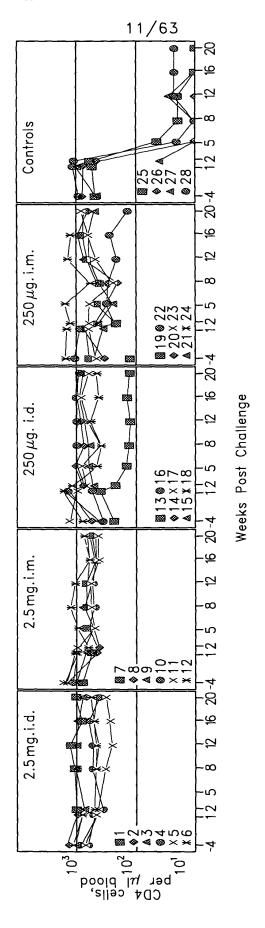
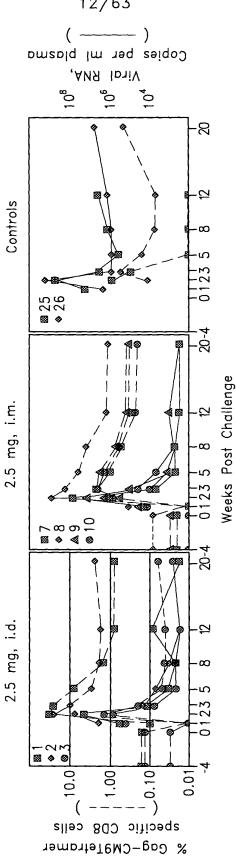
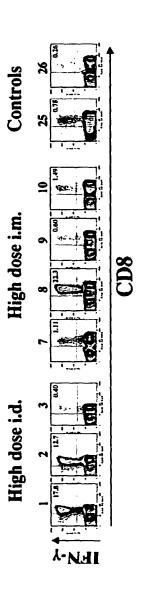


FIG. 8E

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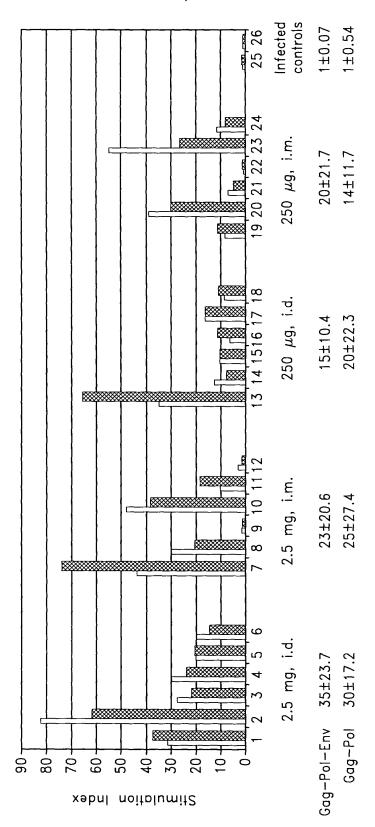
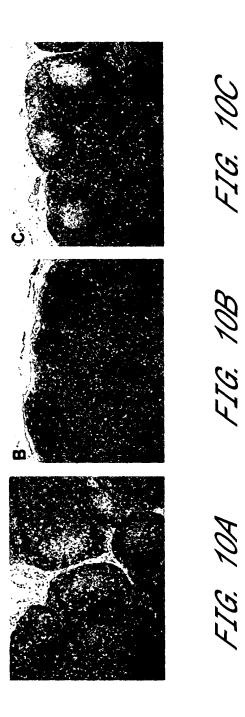
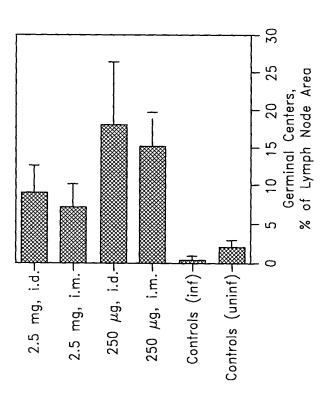


FIG. 9C

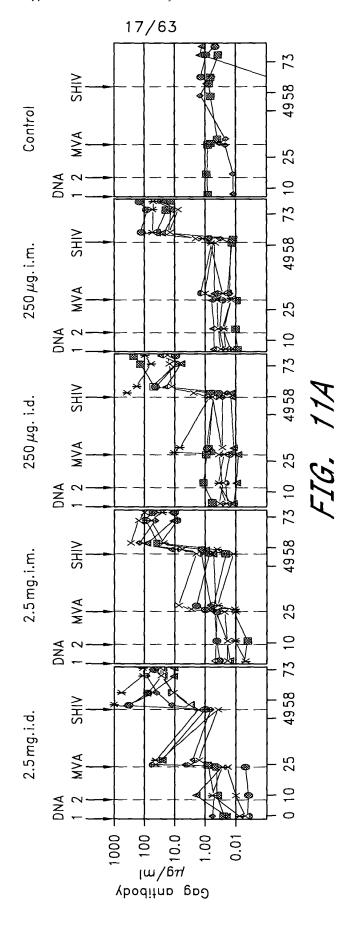
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Atty Docket: NIH211.001C1 Appl. No.: Unknown

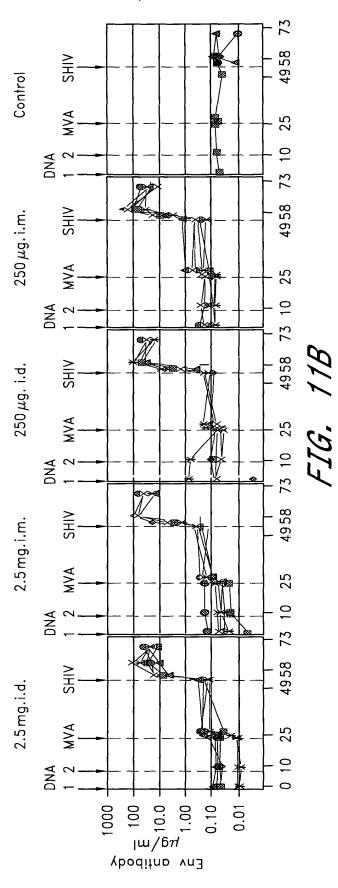


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Atty Docket: NIH211.001C1 Appl. No.: Unknown

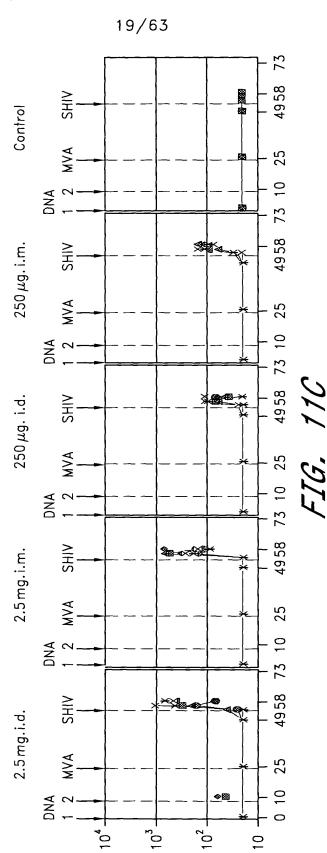


Appl. No.: Unknown Atty Docket: NIH211.001C1



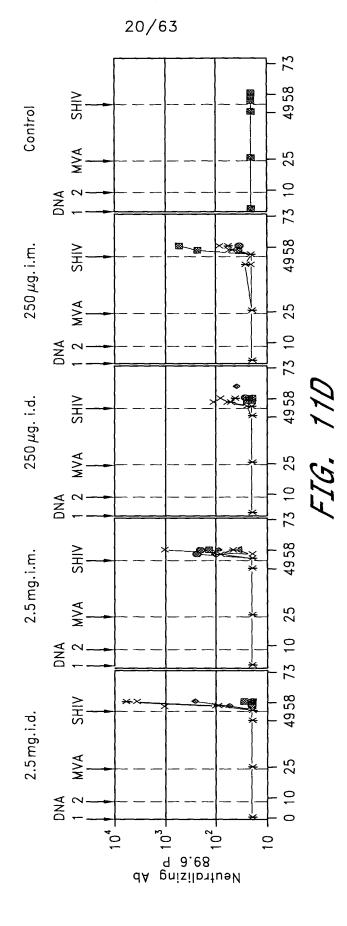


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Appl. No.: Unknown

Atty Docket: NIH211.001C1

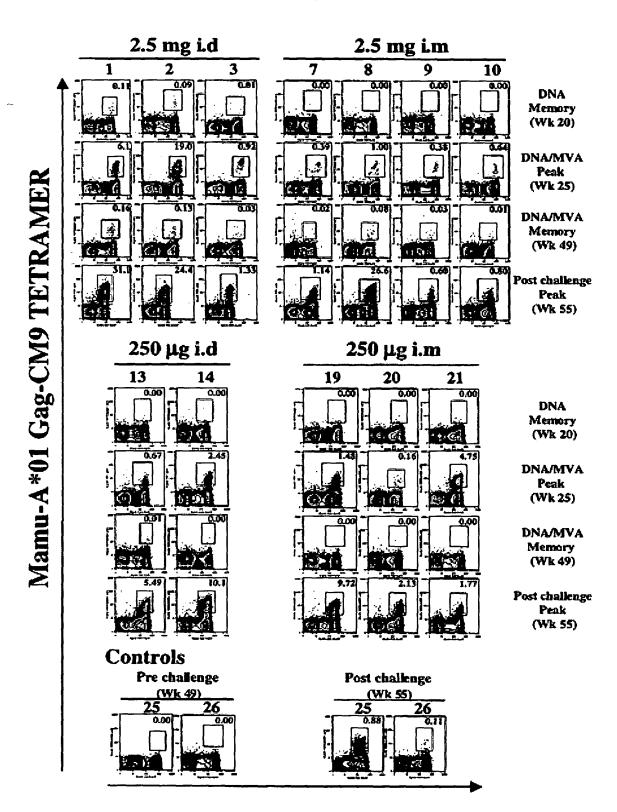


FIG. 12

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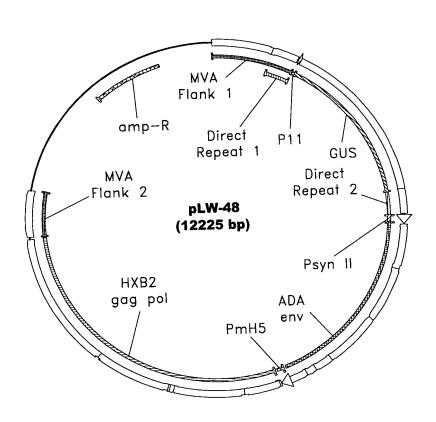


FIG. 13

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TGGATGGTGT TATTGTATAC TGTCTAAACG CGTTAGTAAA	TGATTTCATG ATTAAACCAT GTTGTGAAAA AGTCAAGAAC GTTCACATTG	ACAGTGATTG CAGATTTGCC ATATATGGAT	CAAG AATATCCA	ATATAATTAT TTTAAACCTA AAGATGCCAT TCCTGTTATT	TTAA TCTCATCTGA
ACCTACCACA ATAACATATG ACAGATTTGC GCAATCATTT	ACTAAAGTAC TAATTTGGTA CAACACTTTT TCAGTTCTTG CAAGTGTAAC	TGTCACTAAC GTCTAAACGG TATATACCTA	GTTC TTATAGGI	TATATTAATA AAATTTGGAT TTCTACGGTA AGGACAATAA	AATT AGAGTAGACT
1 GAATTCGTTG GTGGTCGCCA TGGATGGTGT TATTGTATAC TGTCTAAACG CGTTAGTAAA ACATGGCGAG	71 GAAATAAATC ATATAAAAAA TGATTTCATG ATTAAACCAT GTTGTGAAAA AGTCAAGAAC GTTCACATTG	141 GCGGACAATC TAAAAACAAT ACAGTGATTG CAGATTTGCC ATATATGGAT	211 CAATTCACTG TATAAAAGA ATGTATCAAG AATATCCAGA TTTGCTAATT TGATAAAGAT AGATGACGAT	281 GACAAGACTC CTACTGGTGT ATATAATTAT	351 GAAAGGATAG AGATGTTTGT GAACTATTAA TCTCATCTGA TAAAGCGTGT GCGTGTATAG AGTTAAATTC
CTTAAGCAAC CACCAGCGGT ACCTACCACA ATAACATATG ACAGATTTGC GCAATCATTT TGTACCGCTC	CTTTATTTAG TATATTTTT ACTAAAGTAC TAATTTGGTA CAACACTTTT TCAGTTCTTG CAAGTGTAAC	CGCCTGTTAG ATTTTTGTTA TGTCACTAAC GTCTAAACGG TATATACCTA	GTTAAGTGAC ATATTTTCT TACATAGTTC TTATAGGTCT AAACGATTAA ACTATTTCTA TCTACTGCTA	CTGTTCTGAG GATGACCACA TATATTAATA	CTTTCCTATC TCTACAAACA CTTGATAATT AGAGTAGACT ATTTCGCACA CGCACATATC TCAATTTAAG

FIG. 14A

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ATAAAACTTG CTAATAAGAG TAATATAGAT ATCTTGAATG ATTAGACAAT ACTACAATTA ACGATGAGTG TAGATGCTGT TATTTTGAAC CTGTTTGATT TCTCTATCGA TGCGGCACCT CTCTTAAGAA GTGTAACCGA TAATATGTT ATTATATCTA GACACCAGCG TCTACATGAC GAGCTTCCGA GTTCCAATTG GTTCAAGTTT TACATAAGTA TAAAGTCCGA CAAGGTTAAC CAAGTTCAAA ATGTATTCAT ATTTCAGGCT CTATTGTTCT ATATTATATA TGGTTGTTGA TGGATCTGTG ATGCATGCAA TAGCTGATAA TAGAACTTAC CACATTGGCT ATTATTACAA ATCTACGACA TGGTTTCCTT TACGTAGTAA ACCTAGACAC TACGTACGTT ATCGACTATT TGCTACTCAC TGATGTTAAT GACAAACTAA AGAGATAGCT ACGCCGTGGA GAGAATTCTT AAGGAAAAA GGTACCTACA CTGTGGTCGC AGATGTACTG CTCGAAGGCT TAATCTGTTA ACCAACAACT TATAATATAT GCAAAAATAT CGGTAAGAAG CGTTTTTATA GATAACAAGA **FATATTTCAT** GCAAATATTA CGTTTATAAT 491 561 631 701

GATTATTCTC

ACCAAAGGAA ATGCATCATT

CCATGGATGT TTCCTTTTTT

ATATAAAGTA GCCATTCTTC

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FIG. 14B

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177	771 CACAGATTAG GATTUTIGAT AGAGATGAGA TGUTCAATGG ATCATUGIGI GALATGAACA GACATIGIAL GTGTCTAATC CTAAGAACTA TCTCTACTCT ACGAGTTACC TAGTAGCACA CTATACTTGT CTGTAACATA
841	TATGATGAAT TTACCTGATG TAGGCGAATT TGGATCTAGT ATGTTGGGGA AATATGAACC TGACATGATT ATACTACTTA AATGGACTAC ATCCGCTTAA ACCTAGATCA TACAACCCCT TTATACTTGG ACTGTACTAA
911	AAGATTGCTC TTTCGGTGGC TGGGTACCAG GCGCGCCTTT CATTTTGTTT TTTTCTATGC TATAAATGGT TTCTAACGAG AAAGCCACCG ACCCATGGTC CGCGGGAAA GTAAAACAAA AAAAGATACG ATATTTACCA
981	ACGTCCTGTA GAAACCCCAA CCCGTGAAAT CAAAAACTC GACGGCCTGT GGGCATTCAG TCTGGATCGC TGCAGGACAT CTTTGGGGTT GGGCACTTTA GTTTTTTGAG CTGCCGGACA CCCGTAAGTC AGACCTAGCG
051	GAAAACTGTG GAATTGATCA GCGTTGGTGG GAAAGCGCGT TACAAGAAAG CCGGGCAATT GCTGTGCCAG CTTTTGACAC CTTAACTAGT CGCAACCACC CTTTCGCGCA ATGTTCTTTC GGCCCGTTAA CGACACGGTC

Atty Docket: NIH211.001CI Appl. No.: Unknown

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1121	
1191	AGTCTTTATA CCGAAAGGTT GGGCAGGCCA GCGTATCGTG CTGCGTTTCG ATGCGGTCAC TCATACGCC TCAGAAATAT GGCTTTCCAA CCCGTCCGGT CGCATAGCAC GACGCAAAGC TACGCCAGTG AGTAATGCCG
1261	AAAGTGTGGG TCAATAATCA GGAAGTGATG GAGCATCAGG GCGGCTATAC GCCATTTGAA GCCGATGTCA TTTCACACCC AGTTATTAGT CCTTCACTAC CTCGTAGTCC CGCCGATATG CGGTAAACTT CGGCTACAGT
1331	CGCCGTATGT TATTGCCGGG AAAAGTGTAC GTATCACCGT TTGTGTGAAC AACGAACTGA ACTGGCAGAC GCGGCATACA ATAACGGCCC TTTCACATG CATAGTGGCA AACACACTTG TTGCTTGACT TGACCGTCTG
1401	
1471	AACTATGCCG GAATCCATCG CAGCGTAATG CTCTACACCA CGCCGAACAC CTGGGTGGAC GATATCACCG TTGATACGGC CTTAGGTAGC GTCGCATTAC GAGATGTGGT GCGGCTTGTG GACCCACCTG CTATAGTGGC

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1541	TGGTGACGCA ACCACTGCGT	TGTCGCGCAA ACAGCGCGTT	TGGTGACGCA TGTCGCGCAA GACTGTAACC ACGCGTCTGT TGACTGGCAG GTGGTGGCCA ATGGTGATGT ACCACTGCGT ACAGCGCGTT CTGACATTGG TGCGCAGACA ACTGACCGTC CACCACCGGT TACCACTACA	ACGCGTCTGT TGCGCAGACA	TGACTGGCAG ACTGACCGTC	GTGGTGGCCA CACCACCGGT	ATGGTGATGT TACCACTACA
1191	CAGCGTTGAA (GTCGCAACTT (CTGCGTGATG	CTGCGTGATG CGGATCAACA GGTGGTTGCA ACTGGACAAG GCACTAGCGG GACTTTGCAA	GGTGGTTGCA	ACTGGACAAG TGACCTGTTC	GCACTAGCGG	GACTTTGCAA
1681	GTGGTGAATC (CACCACTTAG (CGCACCTCTG	CGCACCTCTG GCAACCGGGT GAAGGTTATC TCTATGAACT GTGCGTCACA GCCAAAAGCC GCGTGGAGAC CGTTGGCCCA CTTCCAATAG AGATACTTGA CACGCAGTGT CGGTTTTCGG	GAAGGTTATC	TCTATGAACT AGATACTTGA	GTGCGTCACA	GCCAAAAGCC
1751	AGACAGAGTG TCTGTCTCAC	TGATATCTAC	AGACAGAGTG TGATATCTAC CCGCTTCGCG TCGGCATCCG GTCAGTGGCA GTGAAGGGCG AACAGTTCCT TCTGTCTCAC ACTATAGATG GGCGAAGCGC AGCCGTAGGC CAGTCACCGT CACTTCCCGC TTGTCAAGGA	TCGGCATCCG AGCCGTAGGC	GTCAGTGGCA CAGTCACCGT	GTGAAGGGCG CACTTCCCGC	AACAGTTCCT TTGTCAAGGA
1821	GATTAACCAC /	AAACCGTTCT TTTGGCAAGA	AAACCGTTCT ACTTTACTGG CTTTGGTCGT CATGAAGATG CGGACTTGCG TGGCAAAGGA FTTGGCCAAGA TGAAATGACC GAAACCAGCA GTACTTCTAC GCCTGAACGC ACCGTTTCCT	CTTTGGTCGT	CATGAAGATG	CGGACTTGCG GCCTGAACGC	TGCCAAAGGA ACCGTTTCCT
891	TTCGATAACG	TGCTGATGGT ACGACTACCA	TTCGATAACG TGCTGATGGT GCACGACCAC GCATTAATGG ACTGGATTGG GGCCAACTCC TACCGTACCT AAGCTATTGC ACGACTACCA CGTGCTGGTG CGTAATTACC TGACCTAACC CCGGTTGAGG ATGGCATGGA	GCATTAATGG	ACTGGATTGG TGACCTAACC	GGCCAACTCC CCGGTTGAGG	TACCGTACCT

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1961	CGCATTACCC GCGTAATGGG	TTACGCTGAA AATGCGACTT	TTACGCTGAA GAGATGCTCG ACTGGGCAGA TGAACATGGC ATCGTGGTGA TTGATGAAAC AATGCGACTT CTCTACGAGC TGACCCGTCT ACTTGTACCG TAGCACCACT AACTACTTTG	ACTGGGCAGA TGACCCGTCT	TGAACATGGC ACTTGTACCG	ATCGTGGTGA TAGCACCACT	TTGATGAAAC AACTACTTTG
2031	TGCTGCTGTC (GGCTTTAACC CCGAAATTGG	TGCTGCTGTC GGCTTTAACC TCTCTTTAGG CATTGGTTTC GAAGCGGGCA ACAAGCCGAA AGAACTGTAC ACGACGACAG CCGAAATTGG AGAGAATCC GTAACCAAAG CTTCGCCCGT TGTTCGGCTT TCTTGACATG	CATTGGTTTC GTAACCAAAG	GAAGCGGGCA CTTCGCCCGT	ACAAGCCGAA	AGAACTGTAC TCTTGACATG
2101	AGCGAAGAGG	CAGTCAACGG	AGCGAAGAGG CAGTCAACGG GGAAACTCAG CAAGCGCACT TACAGGCGAT TAAAGAGCTG ATAGCGCGTG TCGCTTCTCC GTCAGTTGCC CCTTTGAGTC GTTCGCGTGA ATGTCCGCTA ATTTCTCGAC TATCGCGCAC	CAAGCGCACT	TACAGGCGAT ATGTCCGCTA	TAAAGAGCTG ATTTCTCGAC	ATAGCGCGTG TATCGCGCAC
2171	ACAAAAACCA TGTTTTTGGT	CCCAAGCGTG GGGTTCGCAC	CCCAAGCGTG GTGTGGGA GTATTGCCAA CGAACCGGAT ACCCGTCCGC AAGGTGCACG	GTATTGCCAA CATAACGGTT	CGAACCGGAT GCTTGGCCTA	ACCCGTCCGC TGGGCAGGCG	AAGGTGCACG TTCCACGTGC
2241	GGAATATTTC CCTTATAAAG	GCGCCACTGG	GGAATATTTC GCGCCACTGG CGGAAGCAAC GCGTAAACTC GACCCGACGC GTCCGATCAC CTGCGTCAAT CCTTATAAAG CGCGGTGACC GCCTTCGTTG CGCATTTGAG CTGGGCTGCG CAGGCTAGTG GACGCAGTTA	GCGTAAACTC	GACCCGACGC	GTCCGATCAC	CTGCGTCAAT
2311	GTAATGTTCT (GCGACGCTCA		ATCAGCGATC TAGTCGCTAG	TCTTTGATGT	CACCGATACC ATCAGCGATC TCTTTGATGT GCTGTGCCTG AACCGTTATT GTGCCTATGG TAGTCGCTAG AGAAACTACA CGACAGGAC TTGGCAATAA	AACCGTTATT TTGGCAATAA

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2381		TGTCCAAAGC ACAGGTTTCG	ACGGATGGTA TGTCCAAAGC GGCGATTTGG AAACGGCAGA GAAGGTACTG GAAAAAGAAC TTCTGGCCTG TGCCTACCAT ACAGGTTTCG CCGCTAAACC TTTGCCGTCT CTTCCATGAC CTTTTTCTTG AAGACCGGAC	AAACGGCAGA TTTGCCGTCT	GAAGGTACTG CTTCCATGAC	GAAAAAGAAC CTTTTTCTTG	TTCTGGCCTG AAGACCGGAC
2451	GCAGGAGAAA CT CGTCCTCTT GA	CTGCATCAGC	GCAGGAGAAA CTGCATCAGC CGATTATCAT CACCGAATAC GGCGTGGATA CGTTAGCCGG GCTGCACTCA CGTCCTCTTT GACGTAGTCG GCTAATAGTA GTGGCTTATG CCGCCCTAT GCAATCGGCC CGACGTGAGT	CACCGAATAC	GGCGTGGATA	CGTTAGCCGC	GCTGCACTCA
2521	ATGTACACCG TACATGTGGC	ACATGTGGAG TGTACACCTC	ATGTACACCG ACATGTGGAG TGAAGAGTAT CAGTGTGCAT GGCTGGATAT GTATCACCGC GTCTTTGATC TACATGTGGC TGTACACCTC ACTTCTCATA GTCACACGTA CCGACCTATA CATAGTGGCG CAGAAACTAG	CAGTGTGCAT	GGCTGGATAT	GTATCACCGC	GTCTTTGATC
2591	GCGTCAGCGC	CGTCGTCGGT GCAGCAGCCA	GCGTCAGCGC CGTCGTCGGT GAACAGGTAT GGAATTTCGC CGATTTTGCG ACCTCGCAAG GCATATTGCG CGCAGTCGCG GCAGCAGCCA CTTGTCCATA CCTTAAAGCG GCTAAAAGGC TGGAGCGTTC CGTATAACGC	GGAATTTCGC CCTTAAAGCG	CGATTTTGCG	ACCTCGCAAG	GCATATTGCG
2661	CGTTGGCGGT GCAACCGCCA	AACAAGAAAG TTGTTCTTTC	CGTTGGCGGT AACAAGAAAG GGATCTTCAC TCGCGACCGC AAACCGAAGT CGGCGGCTTT TCTGCTGCAA GCAACCGCCA TTGTTCTTTC CCTAGAAGTG AGCGCTGGCG TTTGGCTTCA GCCGCCGAAA AGACGACGTT	TCGCGACCGC AGCGCTGGCG	AAACCGAAGT TTTGGCTTCA	CGGCGGCTTT	TCTGCTGCAA AGACGACGTT
2731		CTGGCATGAA	AAACGCTGGA CTGGCATGAA CTTCGGTGAA AAACCGCAGC AGGGAGGCAA ACAATGAGAG CTCGGTTGTT TTTGCGACCT GACCGTACTT GAAGCCACTT TTTGGCGTCG TCCCTCCGTT TGTTACTCTC GAGCCAACAA	AAACCGCAGC AGGGAGGCAA TTTGGCGTCG TCCCTCCGTT	AGGGAGGCAA TCCCTCCGTT	ACAATGAGAG TGTTACTCTC	CTCGGTTGTT

MVA EXPRESSING MODIFIED HIV ENVELOPE, GAG, AND POL GENES Moss et al. Appl. No.: Unknown Atty Docket: NIH211.001C1

2801	CTACCTAGAC ACTACGTACC TATCGACTA TATCTTGAA TGCGTTTATA ATCGTTTTA TATAATCTGT CTACCTAGAC ACTACGTACG TTATCGACTA TTATCTTGAA TGCGTTTATA ATCGTTTTA TATAATCTGT	AATAGCTGAT TTATCGACTA	AATAGAACTT TTATCTTGAA	ACGCAAATAT TGCGTTTATA	TAGCAAAAAT ATCGTTTTTA	ATATTAGACA TATAATCTGT
2871	ATACTACAAT TAACGATGAG TGTAGATGCT GTTATTTTGA ACCACAGATT TATGATGTTA ATTGCTACTC ACATCTACGA CAATAAAACT TGGTGTCTAA	TGTAGATGCT	GTTATTTGA	ACCACAGATT TGGTGTCTAA	TAACGATGAG TGTAGATGCT GTTATTTTGA ACCACAGATT AGGATTCTTG ATAGAGATGA ATTGCTACTC ACATCTACGA CAATAAAACT TGGTGTCTAA TCCTAAGAAC TATCTCTACT	ATAGAGATGA TATCTCTACT
2941	2941 GATGCTCAAT GGATCATCGT GTGATATGAA CAGACATTGT ATTATGATGA ATTTACCTGA TGTAGGCGAA	GTGATATGAA	CAGACATTGT	ATTATGATGA	GTGATATGAA CAGACATTGT ATTATGATGA ATTTACCTGA TGTAGGGGAA	TGTAGGCGAA
	CTACGAGTTA CCTAGTAGCA CACTATACTT GTCTGTAACA TAATACTACT TAAATGGACT ACATCCGCTT	CACTATACTT	GTCTGTAACA	TAATACTACT	CACTATACTT GTCTGTAACA TAATACTACT TAAATGGACT ACATCCGCTT	ACATCCGCTT
3011	TTTGGATCTA GTATGTTGGG GAAATATGAA CCTGACATGA TTAAGATTGC TCTTTCGGTG GCTGGCGCCC AAACCTAGAT CATACAACCC CTTTATACTT GGACTGTACT AATTCTAACG AGAAAGCCAC CGACCGCCGG	GAAATATGAA CTTTATACTT	ATGTTGGG GAAATATGAA CCTGACATGA TTAAGATTGC TCTTTCGGTG TACAACCC CTTTATACTT GGACTGTACT AATTCTAACG AGAAAGCCAC	TTAAGATTGC AATTCTAACG	TCTTTCGGTG AGAAAGCCAC	CCTCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
3081	CGCTCGAGTA AA	AAATATTCTA	ATTTATAGGA	CGGTTTTGAT	AAATGAAA AAATATTCTA ATTTATAGGA CGGTTTTGAT TTTCTTTTTT TCTATGCTAT	TCTATGCTAT
	GCGAGCTCAT TT	TTTATAAGAT	TAAATATCCT	GCCAAAACTA	TTTACTTT TTTATAAGAT TAAATATCCT GCCAAAACTA AAAGAAAAAA AGATACGATA	AGATACGATA
3151	AAATAATAAA TAGCGGCCGC ACCATGAAAG TGAAGGGGAT CAGGAAGAAT TATCAGCACT TGTGGAAATG	ACCATGAAAG	ACCATGAAAG TGAAGGGGAT CAGGAAGAAT	CAGGAAGAAT	TATCAGCACT TGTGGAAATG	TGTGGAAATG
	TTTATTATTT ATCGCCGGCG TGGTACTTTC ACTTCCCCTA GTCCTTCTTA ATAGTCGTGA ACACCTTTAC	FGGTACTTTC	TGGTACTTTC ACTTCCCCTA GTCCTTCTTA	GTCCTTCTTA	ATAGTCGTGA ACACCTTTAC	ACACCTTTAC

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3221	GGCCATCATG		CTCCTTGGGA TGTTGATGAT CTGTAGTGCT GTAGAAAATT TGTGGGTCAC AGTTTATTAT GAGGAACCCT ACAACTACTA GACATCACGA CATCTTTAA ACACCCAGTG TCAAATAATA	CTGTAGTGCT GACATCACGA	GTAGAAAATT CATCTTTTAA	TGTGGGTCAC ACACCCAGTG	AGTTTATTAT TCAAATAATA
3291	GGGGTACCTG	TGTGGAAAGA ACACCTTTCT	GGGGTACCTG TGTGGAAGA AGCAACCACC ACTCTATTTT GTGCATCAGA TGCTAAAGCA TATGATACAG CCCCATGGAC ACACCTTTCT TCGTTGGTGG TGAGATAAAA CACGTAGTCT ACGATTTCGT ATACTATGTC	ACTCTATTTT TGAGATAAAA	GTGCATCAGA CACGTAGTCT	TGCTAAAGCA ACGATTTCGT	TATGATACAG ATACTATGTC
3361	AGGTACATAA TCCATGTATT	TGTTTGGGCC ACAAACCCGG	AGGTACATAA TGTTTGGGCC ACACATGCCT GTGTACCCAC AGACCCCAAC CCACAAGAAG TAGTATTGGA TCCATGTATT ACAAACCCGG TGTGTACGGA CACATGGGTG TCTGGGGTTG GGTGTTCTTC ATCATAACCT	GTGTACCCAC CACATGGGTG	AGACCCCAAC TCTGGGGTTG	CCACAAGAAG GGTGTTCTTC	TAGTATTGGA
3431	AAATGTGACA TTTACACTGT	GAAAATTTTA CTTTTAAAAT	GAAAATTTTA ACATGTGGAA AAATAACATG GTAGAACAGA TGCATGAGGA TATAATCAGT CTTTTAAAAT TGTACACCTT TTTATTGTAC CATCTTGTCT ACGTACTCCT ATATTAGTCA	AAATAACATG TTTATTGTAC	ACATGTGGAA AAATAACATG GTAGAACAGA TGCATGAGGA TATAATCAGT TGTACACCTT TTTATTGTAC CATCTTGTCT ACGTACTCCT ATATTAGTCA	TGCATGAGGA ACGTACTCCT	TATAATCAGT ATATTAGTCA
3501	TTATGGGATC AATACCCTAG	AAAGCCTAAA TTTCGGATTT	FR 5	AAATTAAÇÇC TTTAATTGGG	GCCATGTGTA AAATTAACCC CACTCTGTGT CGGTACACAT TTTAATTGGG GTGAGACACA	TACTTTAAAT ATGAAATTTA	TGCACTGATT ACGTGACTAA
3571	TGAGGAATGT '	TACTAATATC ATGATTATAG	TACTAATATC AATAATAGTA GTGAGGGAAT GAGAGGAGAA ATAAAAAACT GCTCTTTCAA ATGATTATAG TTATTATCAT CACTCCCTTA CTCTCCTCTT TATTTTTGA CGAGAAAGTT	GTGAGGGAAT CACTCCCTTA	GAGAGGAGAA CTCTCCTCTT	ATAAAAACT GCTCTTTCAA TATTTTTGA CGAGAAGTT	GCTCTTTCAA CGAGAAAGTT

FIG. 14I

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3641		AGCATAAGAG TCGTATTCTC	ATAAGGTGAA TATTCCACTT	GAAAGACTAT CTTTCTGATA	GCACTTTTCT CGTGAAAGA	GCATAAGAG ATAAGGTGAA GAAAGACTAT GCACTTTT©T ATAGACTTGA TGTAGTACCA CGTATTCTC TATTCCACTT CTTTCTGATA CGTGAAAAGA TATCTGAACT ACATCATGGT	TAGTACCA SATCATGGT
3711	ATAGATAATG A TATCTATTAC T	ATAATACTAG TATTATGATC	TAATACTAG CTATAGGTTG ATTATGATC GATATCCAAC	ATAAATTGTA TATTTAACAT	ATACCTCAAC TATGGAGTTG	ATAGATAATG ATAATACTAG CTATAGGTTG ATAAATTGTA ATACCTCAAC CATTACACAG GCCTGTCCAA TATCTATTAC TATTATGATC GATATCCAAC TATTTAACAT TATGGAGTTG GTAATGTGTC CGGACAGGTT	CTGTCCAA
3781	AGGTATCCTT	TGAGCCAATT	TGAGCCAATT CCCATACATT	ATTGTACCCC	ATTGTACCCC GGCTGGTTTT GCGATTCTAA	AGGTATCCTT TGAGCCAATT CCCATACATT ATTGTACCCC GGCTGGTTTT GCGATTCTAA AGTGTAAAGA	AGTGTAAAGA
	TCCATAGGAA	ACTCGGTTAA	ACTCGGTTAA GGGTATGTAA	TAACATGGGG	TAACATGGGG CCGACCAAAA CGCTAAGATT	TCCATAGGAA ACTCGGTTAA GGGTATGTAA TAACATGGGG CCGACCAAAA CGCTAAGATT TCACATTTCT	TCACATTTCT
3851	CAAGAAGTTC	CAAGAAGTIC AATGGAACAG GGCCATGTAA	AATGGAACAG GGCCATGTAA	AAATGTCAGC	AAATGTCAGC ACAGTACAAT GTACACATGG	AAATGTCAGC ACAGTACAAT GTACACATGG AATTAGGCCA	AATTAGGCCA
	GTTCTTCAAG	GTTCTTCAAG TTACCTTGTC CCGGTACATT	TTACCTTGTC CCGGTACATT	TTTACAGTCG	TTTACAGTCG TGTCATGTTA CATGTGTACC	TTTACAGTCG TGTCATGTTA CATGTGTACC TTAATCCGGT	TTAATCCGGT
3921	GTAGTGTCAA C	CTCAACTGCT GAGTTGACGA	TCAACTGCT GTTAAATGGC AGTCTAGCAG AAGAAGAGGT AGTAATTAGA AGTTGACGA CAATTTACCG TCAGATCGTC TTCTTCTCCA TCATTAATCT	AGTCTAGCAG TCAGATCGTC	AAGAAGAGGT TTCTTCTCCA	FR R	TCTAGTAATT AGATCATTAA
3991	TCACAGACAA	TGCAAAAAC	GCAAAAAC ATAATAGTAC	AGTTGAAAGA	ATCTGTAGAA	GCAAAAAAC ATAATAGTAC AGTTGAAAGA ATCTGTAGAA ATTAATTGTA CAAGACCCAA	CAAGACCCAA
	AGTGTCTGTT	ACGTTTTTG	CGTTTTTTG TATTATCATG	TCAACTTTCT	TAGACATCTT	CGTTTTTTG TATTATCATG TCAACTTTCT TAGACATCTT TAATTAACAT GTTCTGGGTT	GTTCTGGGTT

$\begin{array}{c} \textit{MVA EXPRESSING MODIFIED HIV ENVELOPE, GAG, AND POL} \\ \textit{GENES} \end{array}$

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4061	CAACAATACA GTTGTTATGT		TACATATAGG ATGTATATCC	TACATATAGG ACCAGGAAGA GCATTTTATA ATGTATATCC TGGTCCTTCT CGTAAAATAT	GCATTTTATA CGTAAAATAT	AGGAAAAGTA TACATATAGG ACCAGGAAGA GCATTTTATA CAACAGGAGA AATAATAGGA TCCTTTTCAT ATGTATATCC TGGTCCTTCT CGTAAAATAT GTTGTCCTCT TTATTATCCT	AATAATAGGA TTATTATCCT
4131	GATATAAGAC	AAGCACATTG	AAGCACATTG CAACATTAGT	AGAACAAAT	GGAATAACAC	GATATAAGAC AAGCACATTG CAACATTAGT AGAACAAAAT GGAATAACAC TTTAAATCAA ATAGCTACAA	ATAGCTACAA
	CTATATTCTG	TTCGTGTAAC	TTCGTGTAAC GTTGTAATCA	TCTTGTTTTA	CCTTATTGTG	CTATATTCTG TTCGTAAC GTTGTAATCA TCTTGTTTTA CCTTATTGTG AAATTTAGTT TATCGATGTT	TATCGATGTT
4201	AATTAAAAGA	ACAATTTGGG	ACAATTTGGG AATAATAAAA	CAATAGTCTT	TAATCAATCC	AATTAAAAGA ACAATTTGGG AATAATAAAA CAATAGTCTT TAATCAATCC TCAGGAGGGG ACCCAGAAAT	ACCCAGAAAT
	TTAATTTTCT	TGTTAAACCC	TGTTAAACCC TTATTATTTT	GTTATCAGAA	ATTAGTTAGG	TTAATTITCT TGTTAAACCC TTATTATTTT GTTATCAGAA ATTAGTTAGG AGTCCTCCCC TGGGTCTTTA	TGGGTCTTTA
4271	TGTAATGCAC	AGTTTTAATT	AGTTTTAATT GTGGAGGGA ATTÖTTCTAC	ATTCTTCTAC	TGTAATTCAA	AGTTTTAATT GTGGAGGGA ATTÖTTCTAC TGTAATTCAA CACAACTGTT TAATAGTACT	TAATAGTACT
	ACATTACGTG	TCAAAATTAA	TCAAAATTAA CACCTCCCCT TAAGAAGATG	TAACAAGATG	ACATTAAGTT	TCAAAATTAA CACCTCCCCT TAAGAAGATG ACATTAAGTT GTGTTGACAA ATTATCATGA	ATTATCATGA
4341	_	ATGGTACTTG TACCATGAAC	GAATTTAACA CTTAAATTGT	CAATCGAATG	ATGGTACTTG GAATTTAACA CAATCGAATG GTACTGAAGG AAATGACACT TACCATGAAC CTTAAATTGT GTTAGCTTAC CATGACTTCC TTTACTGTGA	ATGGTACTTG GAATTTAACA CAATCGAATG GTACTGAAGG AAATGACACT ATCACACTCC TACCATGAAC CTTAAATTGT GTTAGCTTAC CATGACTTCC TTTACTGTGA TAGTGTGAGG	ATCACACTCC TAGTGTGAGG
4411	CATGTAGAAT GTACATCTTA	AAAACAAATT TTTTGTTTAA	ATAAATATGT TATTTATACA	GGCAGGAAGT CCGTCCTTCA	GGCAGGAAGT AGGAAAAGCA CCGTCCTTCA TCCTTTTCGT	CATGTAGAAT AAAACAAATT ATAAATATGT GGCAGGAAGT AGGAAAAGCA ATGTATGCCC CTCCCATCAG GTACATCTTA TTTTGTTTAA TATTTATACA CCGTCCTTCA TCCTTTTCGT TACATACGGG GAGGGTAGTC	CTCCCATCAG

FIG. 14K

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4481	AGGACAAATT TCCTGTTTAA	AGATGCTCAT TCTACGAGTA	AGATGCTCAT CAAATATTAC AGGGCTAATA TTAACAAGAG ATGGTGGAAC TAACAGTAGT TCTACGAGTA GTTTATAATG TCCCGATTAT AATTGTTCTC TACCACCTTG ATTGTCATCA	AGGGCTAATA TCCCGATTAT	TTAACAAGAG AATTGTTCTC	ATGGTGGAAC TACCACCTTG	TAACAGTAGT ATTGTCATCA
4551	GGTCCGAGA	TCTTCAGACC AGAAGTCTGG	TCTTCAGACC TGGGGAGGA GATATGAGGG ACAATTGGAG AAGTGAATTA TATAAATATA AGAAGTCTGG ACCCCTCCT CTATACTCCC TGTTAACCTC TTCACTTAAT ATATTTATAT	GATATGAGGG CTATACTCCC	AGGG ACAATTGGAG AAGTGAATTA TCCC TGTTAACCTC TTCACTTAAT	AAGTGAATTA TTCACTTAAT	TATAAATATA ATATTTATAT
4621	AAGTAGTAAA TTCATCATTT	AATT TTAA	AATTGAACCA TTAGGAGTAG CACCCACCAA GGCAAAAGA AGAGTGGTGC AGAGAGAAAA TTAACTTGGT AATCCTCATC GTGGGTGGTT CCGTTTTTCT TCTCACCACG TCTCTCTTT	CACCCACCAA GTGGGTGGTT	GGCAAAAGA CCGTTTTTCT	AGAGTGGTGC TCTCACCACG	AGAGAGAAAA TCTCTCTTTT
4691	AAGAGCAGTG TTCTCGTCAC	GGAA	GGAACGATAG GAGCTATGTT CCTTGGGTTC TTĠGGAGCAG CAGGAAGCAC TATGGGGGCA CCTTGCTATC CTCGATACAA GGAACCCAAG AACCCTCGTC GTCCTTCGTG ATACCCGCGT	CCTTGGGTTC	GAGCTATGTT CCTTGGGTTC TTGGGAGCAG CAGGAAGCAC TATGGGCGCA CTCGATACAA GGAACCCAAG AACCCTCGTC GTCCTTCGTG ATACCCGCGT	CAGGAAGCAC GTCCTTCGTG	TATGGGCGCA ATACCCGCGT
4761		CGCTGACGGT GCGACTGCCA	CGCTGACGGT ACAĞGCCAGA CTATTATTGT CTGGTATAGT GCAACAGCAG AACAATTTGC GCGACTGCCA TGTCCGGTCT GATAATAACA GACCATATCA CGTTGTCGTC TTGTTAAACG	CTATTATTGT GATAATAACA	CTGGTATAGT GCAACAGC. GACCATATCA CGTTGTCG	GCAACAGCAG	AACAATTTGC TTGTTAAACG
4831	TGAGGGCTAT	TGAGGCGCAA ACTCCGCGTT	TGAGGCGCAA CAGCATCTGT TGCAACTCAC AGTCTGGGGC ATCAAGCAGC TCCAGGCAAG ACTCCGCGTT GTCGTAGACA ACGTTGAGTG TCAGACCCCG TAGTTCGTCG AGGTCCGTTC	TGCAACTCAC ACGTTGAGTG	AGTCTGGGGC TCAGACCCCG	ATCAAGCAGC TAGTTCGTCG	TCCAGGCAAG AGGTCCGTTC

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4901	AGTCCTGGCT TCAGGACCGA	Grcgaaagat Caccttrcta	Gregaagat acctaagega tcaacagete ctagegattt Cacctteta tegatecet agttetegag gatecetaaa	TCAACAGCTC AGTTGTCGAG	CTAGGGATTT GATCCCTAAA	Gregaagat acctaagega tcaacagete ctagegattt gegetteete tggaaaacte Cacctteeta tegateecet agttgegag gatecetaaa eeccaacgag accttitgag	rggaaaactc accttttgag
4971	ATCTGCACCA TAGACGTGGT		CTGCTGTGCC TTGGAATGCT AGTTGGAGTA ATAAAACTCT GACGACACGG AACCTTACGA TCAACCTCAT TATTTTGAGA	AGTTGGAGTA TCAACCTCAT	ATAAAACTCT TATTTTGAGA	CTGCTGTGCC TTGGAATGCT AGTTGGAGTA ATAAAACTCT GGATATGATT TGGGATAACA GACGACACGG AACCTTACGA TCAACCTCAT TATTTTGAGA CCTATACTAA ACCCTATTGT	rgggataaca accctattgt
5041	TGACCTGGAT ACTGGACCTA	t) H	GGAGTGGGAA AGAGAAATCG AAAATTACAC AGGCTTAATA CCTCACCCTT TCTCTTTAGC TTTTAATGTG TCCGAATTAT	AAAATTACAC TTTTAATGTG	AGGCTTAATA TCCGAATTAT	GGAGTGGGAA AGAGAAATCG AAAATTACAC AGGCTTAATA TACACCTTAA TTGAGGAATC CCTCACCCTT TCTCTTTAGC TTTTAATGTG TCCGAATTAT ATGTGGAATT AACTCCTTAG	TTGAGGAATC AACTCCTTAG
5111	GCAGAACCAA CGTCTTGGTT	4 6	ATGAACAAGA CTTATTAGCA TACTTGTTCT GAATAATCGT	CTTATTAGCA GAATAATCGT	TTAGATAAGT GGGCAAGTTT AATCTATTCA CCCGTTCAAA	CAAGAAAAGA ATGAACAAGA CTTATTAGCA TTAGATAAGT GGGCAAGTTT GTGGAATTGG GTTCTTTCT TACTTGTTCT GAATAATCGT AATCTATTCA CCCGTTCAAA CACCTTAAACC	GTGGAATTGG CACCTTAACC
5181	5181 TTTGACATAT	3 3	CAAATTGGCT GTGGTATGTA AAAATCTTCA GTTTAACCGA CACCAMACAT TTTTAGAAGT	AAAATCTTCA TTTTAGAAGT	TAATGATAGT ATTACTATCA	AGGAGGCTTG TCCTCCGAAC	G ATAGGTTTAA C TATCCAAATT
5251	GAATAGTTTT CTTATCAAAA		TACTGTACTT TCTATAGTAA ATGACATGAA AGATATCATT	ATAGAGTTAG TATCTCAATC	ATAGAGTTAG GCAGGGATAC TCACCATTGT TATCTCAATC CGTCCCTATG AGTGGTAACA	ATAGAGTTAG GCAGGGATAC TCACCATTGT CATTTCAGAC TATCTCAATC CGTCCCTATG AGTGGTAACA GTAAAGTCTG	CATTTCAGAC GTAAAGTCTG

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5321	CCACCTCCCA GCCCCGAGGG GACCCGACAG GCCCGAAGGA ATCGAAGAAG AAGGTGGAGA CAGAGACTAA GGTGGAGGT CGGGGCTCCT CTCCACCTCT GTCTCGATT	CCCGAGGG	GACCCGACAG	GCCCGAAGGA	ATCGAAGAAG TAGCTTCTTC	AAGGTGGAGA TTCCACCTCT	CAGAGACTAA GTCTCTGATT
5391	TTTTTATGCG GCCGCTGGTA CCCAACCTAA AAATTGAAAA TAAATACAAA GGTTCTTGAG GGTTGTGTA AAAAATACGC CGCCGACCAT GTTAACTTTT ATTTATGTTT CCAAGAACTC CCAACACAAT	CGCTGGTA	CCCAACCTAA GGGTTGGATT	AAATTGAAAA TTTAACTTTT	TAAATACAAA GGTTCTTGAG GGTTGTGTA ATTTATGTTT CCAAGAACTC CCAACACAAT	GGTTCTTGAG	GGTTGTGTTA CCAACACAAT
5461	AATTGAAAGC GAGAAATAAT CATAAATAAG CCCGGGGATC CTCTAGAGTC GACACCATGG GTGCGAGAGC TTAACTTTCG CTCTTATTA GTATTTATTC GGCCCCCTAG GAGATCTCAG CTGTGGTACC CACGCTCTCG	GAAATAAT	CATAAATAAG GTATTTATTC	AG CCCGGGGATC CTCTAGAGTC GACACCATGG GTGCGAGAGC TC GGCCCCTAG GAGATCTCAG CTGTGGTACC CACGCTCTCG	CTCTAGAGTC GAGATCTCAG	GACACCATGG CTGTGGTACC	GTGCGAGAGC CACGCTCTCG
5531	GTCAGTATTA AGCGGGGAG AATTAGATCG ATGGGAAAAA ATTCGGTTAA GGCCAGGGGG AAAGAAAAAA CAGTCATAAT TCGCCCCCTC TTAATCTAGC TACCCTTTTT TAAGCCAATT CCGGTCCCCC TTTCTTTTTT	CGGGGGAG	AATTAGATCG TTAATCTAGC	SCGGGGGG AATTAGATCG ATGGGAAAAA ATTCGGTTAA GGCCAGGGGG AAAGAAAAA	ATTCGGTTAA TAAGCCAATT	GCCCAGGGG	AAAGAAAAA TTTCTTTTT
5601	TATAAATTAA AACATATAGT ATGGGCAAGC AGGGAGCTAG AACGATTCGC AGTTAATCCT GGCCTGTTAG ATATTTAATT TTGTATATCA TACCCGTTCG TCCCTCGATC TTGCTAAGCG TCAATTAGGA CCGGACAATC	CATATAGT	ATGGGCAAGC TACCCGTTCG	AACATATAGT ATGGGCAAGC AGGGAGCTAG AACGATTCGC AGTTAATCCT GGCCTGTTAG TTGTATATCA TACCCGTTCG TCCCTCGATC TTGCTAAGCG TCAATTAGGA CCGGACAATC	AACGATTCGC TTGCTAAGCG	AGTTAATCCT TCAATTAGGA	GGCCTGTTAG CCGGACAATC
5671	AAACATCAGA AGGCTGTAGA CAAATACTGG GACAGCTACA ACCATCCCTT CAGACAGGAT CAGAAGAACT TTTGTAGTCT TCCGACATCT GTTTATGACC CTGTCGATGT TGGTAGGGAA GTCTGTCCTA GTCTTTTTT	GCTGTAGA	CAAATACTGG GTTTATGACC	GCTGTAGA CAAATACTGG GACAGCTACA ACCATCCCTT CAGACAGGAT CAGAAGAACT	ACCATCCCTT TGGTAGGGAA	CAGACAGGAT GTCTGTCCTA	CAGAAGAACT GTCTTCTTGA

MVA EXPRESSING MODIFIED HIV ENVELOPE, GAG, AND POL GENES Moss et al. Appl. No.: Unknown Atty Docket: NIH211.001C1

5741	TAGATCATTA ATCTAGTAAT	TATAATACAG ATATTATGTC	TATAATACAG TAGCAACCCT CTATTGTGTG CATCAAAGGA TAGAGATAAA AGACACCAAG ATATTATGTC ATCGTTGGGA GATAACACAC GTAGTTTCCT ATCTCTATTT TCTGTGGTTC	CTATTGTGTG GATAACACAC	CATCAAAGGA GTAGTTTCCT	TAGAGATAAA ATCTCTATTT	AGACACCAAG TCTGTGGTTC
5811	GAAGCTTTAG CTTCGAAATC	ACAAGATAGA TGTTCTATCT	ACAAGATAGA GGAAGAGAA AACAAAAGTA AGAAAAAGC ACAGCAAGCA GCAGCTGACA TGTTCTATCT CCTTCTCGTT TTGTTTTCAT TCTTTTTTCG TGTCGTTCGT CGTCGACTGT	AACAAAGTA TTGTTTTCAT	AGAAAAAAGC TCTTTTTCG	ACAGCAAGCA TGTCGTTCGT	GCAGCTGACA CGTCGACTGT
5881	CAGGACACAG	CAArcaggre GTTAGTCCAG	caatcaggtc agccaaaatt accctatagt gcagaacatc caggggcaaa tggtacatca gt <u>t</u> agtccag tcggttttaa tgggatatca cgtcttgtag gtccccgttt accatgtagt	ACCCTATAGT TGGGATATCA	GCAGAACATC	CAGGGCCAAA GTCCCCGTTT	TGGTACATCA ACCATGTAGT
5951	GGCCATATCA CCGGTATAGT	CCTAGAACTT GGATCTTGAA		GGTAAAAGTA CCATTTTCAT	GTAGAAGAGA CATCTTCTCT	TAAATGCATG GGTAAAGTA GTAGAAGAGA AGGCTTTCAG CCCAGAAGTG ATTTACGTAC CCATTTTCAT CATCTTCTT TCCGAAAGTC GGGTCTTCA	CCCAGAAGTG
6021	ATACCCATGT TATGGGTACA			GCCACCCCAC	AAGATTTAAA TTCTAAATTT	ATCAGAAGGA GCCACCCCAC AAGATTTAAA CACCATGCTA AACACAGTGG TAGTCTTCCT CGGTGGGGTG TTCTAAATTT GTGGTACGAT TTGTGTCACC	AACACAGTGG TTGTGTCACC
6091	GGGGACATCA	AGCAGCCATG TCGTCGGTAC	AGCAGCCATG CAAATGTTAA AAGAGACCAT CAATGAGGAA GCTGCAGAAT GGGATAGAGT TCGTCGGTAC GTTTACAATT TTCTCTGGTA GTTACTCCTT CGACGTCTTA CCCTATCTCA	AAGAGACCAT TTCTCTGGTA	CAATGAGGAA GTTACTCCTT	GCTGCAGAAT GGGATAGAGT CGACGTCTTA CCCTATCTCA	GGGATAGAGT CCCTATCTCA

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6161 GCATCCAGTG	6231 ACTACTAGTA	6301 ATAAAAGATG	6371 AAGACAAGGA	6441 GCTTCACAGG	6511 CTATTTTAAA
CGTAGGTCAC	TGATGATCAT	TATTTCTAC	TTCTGTTCCT	CGAAGTGTCC	GATAAAATTT
			ľ		
CATGCAGGG	CCCTTCAGG,	GATAATCCT(CCAAAAGAA(AGGTAAAAA	AGCATTGGG/
GTACGTCCC	GGGAAGTCC	CTATTAGGA(GGTTTTCTT	TCCATTTTT	
CATGCAGGGC CTATTGCACC AGGCCAGATG AGAGAACCAA GGGGAAGTGA CATAGCAGGA	CCCTTCAGGA ACAAATAGGA TGGATGACAA ATAATCCACC TATCCCAGTA GGAGAAATTT	GATAATCCTG GGATTAAATA AAATAGTAAG AATGTATAGC CCTACCAGCA TTCTGGACAT	CCAAAAGAAC CCITTAGAGA CTATGTAGAC CGGTTCTATA	1 1	AGCATTGGGA CCAGCGGCTA CACTAGAAGA AATGATGACA GCATGTCAGG GAGTAGGAGG
GTACGTCCCG GATAACGTGG TCCGGTCTAC TCTCTTGGTT CCCCTTCACT GTATCGTCCT	GGGAAGTCCT TGTTTATCCT ACCTACTGTT TATTAGGTGG ATAGGGTCAT CCTCTTTAAA	CTATTAGGAC CCTAATTTAT TTTATCATTC TTACATATCG GGATGGTCGT AAGACCTGTA	GGTTTTCTTG GGAAATCTCT GATACATCTG GCCAAGATAT		TCGTAACCCT GGTCGCCGAT GTGATCTTCT TTACTACTGT CGTACAGTCC CTCATCCTCC
AGGCCAGATG	TGGATGACAA	AAATAGTAAG	CTATGTAGAC	TTGGATGACA GAAACCTTGT TGGTCCAAAA TGCGAACCCA	CACTAGAAGA
TCCGGTCTAC	ACCTACTGTT	TTTATCATTC	GATACATCTG	AACCTACTGT CTTTGGAACA ACCAGGTTTT ACGCTTGGGT	GTGATCTTCT
AGAGAACCAA	ATAATCCACC	AATGTATAGC	CGGTTCTATA	TGGTCCAAAA	AATGATGACA
TCTCTTGGTT	TATTAGGTGG	TTACATATCG	GCCAAGATAT	ACCAGGTTTT	TTACTACTGT
GGGGAGTGA CCCCTTCACT	TATCCCAGTA ATAGGGTCAT	CCTACCAGCA	AAACTCTAAG AGCCGAGCAA TTTGAGATTC TCGGCTCGTT	TGCGAACCCA ACGCTTGGGT	GCATGTCAGG
CATAGCAGGA GTATCGTCCT	GGAGAAATTT	TTCTGGACAT	AGCCGAGCAA TCGGCTCGTT	GATTGTAAGA CTAACATTCT	GAGTAGGAGG

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6581	ACCCGCCCAT TGGCCCGGTA	11	AAGGCAAGAG TTTTGGCTGA AGCAATGAGC CAAGTAACAA ATTCAGCTAC CATAATGATG TTCCGTTCTC AAAACCGACT TCGTTACTCG GTTCATTGTT TAAGTCGATG GTATTACTAC	AGCAATGAGC TCGTTACTCG	CAAGTAACAA GTTCATTGTT	ATTCAGCTAC TAAGTCGATG	CATAATGATG GTATTACTAC
6651	CAGAGAGGCA GTCTCTCCGT	1 (1	ATTTTAGGAA CCAAAGAAAG ATTGTTAAGT GTTTCAATTG TGGCAAAGAA GGGCACACAG TAAAATCCTT GGTTTCTTTC TAACAATTCA CAAAGTTAAAC ACCGTTTCTT CCCGTGTGTC	ATTCTTAAGT TAACAATTCA	GTTTCAATTG CAAAGTTAAC	TGGCAAAGAA ACCGTTTCTT	GGGCACACAG CCCGTGTGTC
6721	CCAGAAATTG	i (i	CAGGCCCCT AGGAAAAGG GCTGTTGGAA ATGTGGAAAG GAAGGACACC AAATGAAAGA GTCCCGGGGA TCCTTTTTCC CGACAACCTT TACACTTTC CTTCCTGFGG TTTACTTTCT	GCTGTTGGAA CGACAACCTT	ATIGTIGGAAAG TACACCTTTC	GAAGGACACC CTTCCTGTGG	AAATGAAAGA TTTACTTTCT
6791	TTGTACTGAG AACATGACTC	AGACAGGCTA TCTGTCCGAT	AGACAGGCTA ATTTTTAGG GAAGATCTGG CCTTCCTACA AGGGAAGGCC AGGGAATTTT TCTGTCCGAT TAAAAAATCC CTTCTAGACC GGAAGGATGT TCCCTTCCGG TCCCTTAAAA	GAAGATCTGG CTTCTAGACC	CCTTCCTACA	AGGGAAGGCC TCCCTTCCGG	AGGGAATTTT TCCCTTAAAA
6861	CTTCAGAGCA GAAGTCTCGT	GACCAGAGCC	GACCAGAGCC AACAGCCCCA CCAGAAGAGA GCTTCAGGTC TGGGGTAGAG ACAACAACTC CTGGTCTCGG TTGTCGGGGT GGTCTTCTCT CGAAGTCCAG ACCCCATCTC TGTTGTTGAG	CCAGAAGAGA GGTCTTCTCT	GCTTCAGGTC	TGGGGTAGAG ACCCCATCTC	ACAACAACTC TGTTGTTGAG
6931	CCCCTCAGAA	GCAGGAGCCG CGTCCTCGGC	GCAGGAĞCCG ATAGACAAGG AACTGTATCC TTTAACTTCC CTCAGATCAC TCTTTGGCAA CGTCCTCGGC TATCTGTTCC TTGACATAGG AAATTGAAGG GAGTCTAGTG AGAAACCGTT	AACTGTATCC TTGACATAGG	TTTAACTTCC AAATTGAAGG	CTCAGATCAC GAGTCTAGTG	TCTTTGGCAA AGAAACCGTT

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	GCTGGGGAGC	ACTCTTATTT	CTATCCCCCC	GTTGATTTCC	TTCGAGATAA	GCTGGGGAGC AGTGTTATTT CTATCCCCCC GTTGATTTCC TTCGAGATAA TCTATGTCCT CGTCTACTAT	CGTCTACTAT
7071	CAGTATTAGA GTCATAATCT	AGAAATGAGT TCTTTACTCA	TTGCCAGGAA	GATGGAAACC CTACCTTTGG	AAAAATGATA TTTTTACTAT	CAGTATTAGA AGAAATGAGT TTGCCAGGAA GATGGAAACC AAAAATGATA GGGGGAATTG GAGGTTTTAT GTCATAATCT TCTTTACTCA AACGGTCCTT CTACCTTTGG TTTTTACTAT CCCCCTTAAC CTCCAAAATA	GAGGTTTTAT CTCCAAAATA
7141	CAAAGTAAGA GTTTCATTCT	CAGTATGATC	AGATACTCAT TCTATGAGTA	AGAAATCTGT TCTTTAGACA	GGACATAAAG CCTGTATTTC	CAAAGTAAGA CAGTATGATC AGATACTCAT AGAAATCTGT GGACATAAAG CTATAGGTAC AGTATTAGTA GTTTCATTCT GTCATACTAG TCTATGAGTA TCTTTAGACA CCTGTATTTC GATATCCATG TCATAATCAT	AGTATTAGTA TCATAATCAT
7211	GGACCTACAC CCTGGATGTG	CTGTCAACAT GACAGTTGTA	AATTGGAAGA TTAACCTTCT	AATCTGTTGA TTAGACAACT	CTCAGATTGG GAGTCTAACC	GGACCTACAC CTGTCAACAT AATTGGAAGA AATCTGTTGA CTCAGATTGG TTGCACTTTA AATTTTCCCA CCTGGATGTG GACAGTTGTA TTAACCTTCT TTAGACAACT GAGTCTAACC AACGTGAAAT TTAAAAGGGT	AATTTTCCCA TTAAAAGGGT
7281	TTAGCCCTAT AATCGGGATA	TA	CCAGTAAAAT GGTCATTTTA	TAAAGCCAGG ATTTCGGTCC	AATGGATGGC TTACCTACCG	TTAGCCCTAT TGAGACTGTA CCAGTAAAAT TAAAGCCAGG AATGGATGGC CCAAAAGTTA AACAATGGCC AATCGGGATA ACTCTGACAT GGTCATTTTA ATTTCGGTCC TTACCTACCG GGTTTTCAAT TTGTTACCGG	AACAATGGCC TTGTTACCGG
7351	ATTGACAGAA TAACTGTCTT	GAAAAATAA CTTTTTTATT	AAGCATTAGT TTCGTAATCA	AGAAATTTGT TCTTTAAACA	ACAGAAATGG TGTCTTTACC	ATTGACAGAA GAAAAATAA AAGCATTAGT AGAAATTTGT ACAGAAATGG AAAAGGAAGG GAAAATTTCA TAACTGTCTT CTTTTTATT TTCGTAATCA TCTTTAAACA TGTCTTTACC TTTTCCTTCC CTTTTAAAGT	GAAAATTTCA CTTTTAAAGT

7001 CGACCCCTCG TCACAATAAA GATAGGGGG CAACTAAAGG AAGCTCTATT AGATACAGGA GCAGATGATA

FIG. 14R

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7421	AAAATTGGGC TTTTAACCCG	,	ATACAATACT TATGTTATGA	CCAGTATTTG GGTCATAAAC	CCATAAAGAA GGTATTTCTT	CTGAGAATCC ATACAATACT CCAGTATTTG CCATAAAGAA AAAAGACAGT ACTAAATGGA GACTCTTAGG TATGTTATGA GGTCATAAAC GGTATTTCTT TTTTCTGTCA TGATTTACCT	ACTAAATGGA FGATTTACCT
7491	GGAAATTAGT CCITTAATCA		AGATITCAGA GAACTTAATA AGAGAACTCA AGACTTCTGG GAAGTTCAAT TCTAAAGTCT CTTGAATTAT TCTCTTGAGT TCTGAAGACC CTTCAAGTTA	AGAGAACTCA TCTCTTGAGT	AGACTTCTGG TCTGAAGACC	GAAGTTCAAT 1 CTTCAAGTTA A	TAGGAATACC ATCCTTATGG
7561	ACATCCCGCA TGTAGGGCGT	1 1.	GGGTTAAAAA AGAAAAATC AGTAACAGTA CTGGATGTGG GTGATGCATA CCCAATTTT TCTTTTTAG TCATTGTCAT GACCTACACC CACTACGTAT	AGTAACAGTA TCATTGTCAT	CTGGATGTGG GACCTACACC		TTTTCAGTT AAAAAGTCAA
7631	CCCTTAGATG	11 :	GAAGTATACT CTTCATATGA	GCATTTACCA CGTAAATGGT	TACCTAGTAT ATGGATCATA	AAGACTTCAG GAAGTATACT GCATTTACCA TACCTAGTAT AAACAATGAG ACACCAGGGA TTCTGAAGTC CTTCATATGA CGTAAATGGT ATGGATCATA TTTGTTACTC TGTGGTCCCT	ACACCAGGGA IGTGGTCCCT
7701	TTAGATATCA AATCTATAGT	V/I 1	GTACAATGTG CTTCCACAGG GATGGAAAGG ATCACCAGCA ATATTCCAAA CATGTTACAC GAAGGTGTCC CTACCTTTCC TAGTGGTCGT TATAAGGTTT	GATGGAAAGG CTACCTTTCC	ATCACCAGCA TAGTGGTCGT	GTACAATGTG CTTCCACAGG GATGGAAAGG ATCACCAGCA ATATTCCAAA GTAGCATGAC CATGTTACAC GAAGGTGTCC CTACCTTTCC TAGTGGTCGT TATAAGGTTT CATCGTACTG	GTAGCATGAC CATCGTACTG
7771	AAAAATCTTA TTTTTAGAAT	n n	AAAAACAAAA TTTTTGTTTT	TCCAGACATA AGGTCTGTAT	GTTATCTATC	GAGCCTTTTA AAAAACAAAA TCCAGACATA GTTATCTATC AATACATGAA CGATTTGTAT CTCGGAAAAT TTTTTGTTTT AGGTCTGTAT CAATAGATAG TTATGTACTT GCTAAACATA	CGATTTGTAT GCTAAACATA

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7841	GTAGGATCTG CATCCTAGAC	ACTTAGAAAT TGAATCTTTA	AGGGCAGCAT TCCCGTCGTA	AGAACAAAA TCTTGTTTT	TAGAGGAGCT ATCTCCTCGA	ACTTAGAAAT AGGGCAGCAT AGAACAAAA TAGAGGAGCT GAGACAACAT CTGTTGAGGT TGAATCTTTA TCCCGTCGTA TCTTGTTTT ATCTCCTCGA CTCTGTTGTA GACAACTCCA	CTGTTGAGGT GACAACTCCA
7911	GGGGACTTAC CCCCTGAATG	ili El	AAAAAACATC TTTTTGTAG	AGAAAGAACC TCTTTCTTGG	TCCATTCCTT AGGTAAGGAA	CACACCAGAC AAAAAACATC AGAAAGAACC TCCATTCCTT TGGATGGGTT ATGAACTCCA GTGTGGTCTG TTTTTGTAG TCTTTCTTGG AGGTAAGGAA ACCTACCCAA TACTTGAGGT	ATGAACTCCA TACTTGAGGT
7981	TCCTGATAAA AGGACTATTT	h N	AGCCTATAGT TCGGATATCA	GCTGCCAGAA CGACGGTCTT	AAAGACAGCT TTTCTGTCGA	TGGACAGTAC AGCCTATAGT GCTGCCAGAA AAAGACAGCT GGACTGTCAA TGACATACAG ACCTGTCATG TCGGATATCA CGACGGTCTT TTTCTGTCGA CCTGACAGTT ACTGTATGTC	ATACAG FATGTC
8051	AAGTTAGTGG TTCAATCACC		TACCGCAAGT ATGGCGTTCA	CAGATTTACC GTCTAAATGG	CAGGGATTAA GTCCCTAATT	GGAAATTGAA TACCGCAAGT CAGATTTACC CAGGGATTAA AGTAAGGCAA TTATGTAAAC CCTTTAACTT ATGGCGTTCA GTCTAAATGG GTCCCTAATT TCATTCCGTT AATACATTTG	STAAAC
8121	TCCTTAGAGG AGGAATCTCC	AACCAAAGCA TTGGTTTCGT	CTAACAGAAG GATTGTCTTC	TAATACCACT ATTATGGTGA	AACAGAAGAA TTGTCTTCTT	AACCAAAGCA CTAACAGAAG TAATACCACT AACAGAAGAA GCAGAGCTAG AACTGGCAGA FTGGTTTCGT GATTGTCTTC ATTATGGTGA TTGTCTTCTT CGTCTCGATC TTGACCGTCT	SGCAGA
8191	AAACAGAGAG TTTGTCTCTC	ATTCTAAAAG TAAGATTTTC	AACCAGTACA TTGGTCATGT	TGGAGTGTAT ACCTCACATA	TATGACCCAT ATACTGGGTA	ATTCTAAAAG AACCAGTACA TGGAGTGTAT TATGACCCAT CAAAAGACTT AATAGCAGAA TAAGATTTTC TTGGTCATGT ACCTCACATA ATACTGGGTA GTTTTCTGAA TTATCGTCTT	AATAGCAGAA TTATCGTCTT

FIG. 14T

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8261	ATACAGAAGC TATGTCTTCG		CCAATGGACA GGTTACCTGT	TATCAAATTT ATAGTTTAAA	ATCAAGAGCC TAGTTCTCGG	AGGGGCAAGG CCAATGGACA TATCAAATTT ATCAAGAGCC ATTTAAAAAT CTGAAAACAG TCCCCGTTCC GGTTACCTGT ATAGTTTAAA TAGTTCTCGG TAAATTTTTA GACTTTTGTC	CTGAAAACAG GACTTTTGTC
8331	GAAAATATGC CTTTTATACG	1	AAGAATGAGG GGTGCCCACA CTAATGATGT AAAACAATTA TTCTTACTCC CCACGGGTGT GATTACTACA TTTTGTTAAT	CTAATGATGT GATTACTACA	AAAACAATTA TTTTGTTAAT	AAGAATGAGG GGTGCCCACA CTAATGATGT AAAACAATTA ACAGAGGCAG TGCAAAAAAT TTCTTACTCC CCACGGGTGT GATTACTACA TTTTGTTAAT TGTCTCCGTC ACGTTTTTTA	TGCAAAAAT ACGTTTTTA
8401	AACCACAGAA TTGGTGTCTT	1 1	TATGGGGAAA ATACCCCTTT	GACTCCTAAA CTGAGGATTT	TTTAAACTAC AAATTTGATG	AGCATAGTAA TATGGGGAAA GACTCCTAAA TTTAAACTAC CCATACAAAA GGAAACATGG TCGTATCATT ATACCCCTTT CTGAGGATTT AAATTTGATG GGTATGTTTT CCTTTGTACC	GGAAACATGG CCTTTGTACC
8471	GAAACATGGT CTTTGTACCA	GGACAGAGTÀ CCTGTCTCAT	TTGGCAAGCC AACCGTTCGG	ACCTGGATTC TGGACCTAAG	CTGAGTGGGA GACTCACCCT	GGACAGAGTÀ TTGGCAAGCC ACCTGGATTC CTGAGTGGGA GTTTGTTAAT ACCCCTCCTT CCTGTCTCAT AACCGTTCGG TGGACCTAAG GACTCACCCT CAAACAATTA TGGGGAGGAA	ACCCCTCCTT
8541	TAGTGAAATT ATCACTTTAA	ATGGTACCAG TACCATGGTC	TTAGAGAAAG AATCTCTTTC	AACCCATAGT TTGGGTATCA	AGGAGCAGAA TCCTCGTCTT	ATGGTACCAG TTAGAGAAAG AACCCATAGT AGGAGCAGAA ACCTTCTATG TAGATGGGGC TACCATGGTC AATCTCTTTC TTGGGTATCA TCCTCGTCTT TGGAAGATAC ATCTACCCCG	TAGATGGGGC
8611	AGCTAACAGG TCGATTGTCC	ik ·	GAGACTAAAT TAGGAAAAGC AGGATATGTT CTCTGATTTA ATCCTTTTCG TCCTATACAA	AGGATATGTT TCCTATACAA	ACTAACAAAG TGATTGTTTC	ACTAACAAAG GAAGACAAAA GGTTGTCCCC TGATTGTTTC CTTCTGTTTT CCAACAGGGG	GGTTGTCCCC

FIG. 14U

MVA EXPRESSING MODIFIED HIV ENVELOPE, GAG, AND POL GENES Moss et al. Appl. No.: Unknown Atty Docket: NIH211.001C1

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9101	ATACTTTTGT TATGAAACA	T	ATTAGTATAC TAATCATATG	GCTACACCTT CGATGTGGAA	GCTACACCTT TTCCTCAGAC ATCTAAAAAA CGATGTGGAA AAGGAGTCTG TAGATTTTTT	ATCTAAAAAA TAGATTTTTT	ATAGGTGATG TATCCACTAC
9171	ATGCAACTTT A	ATCATGTAAT TAGTACATTA	ATCATGTAAT CGAAATAATA CAAATGACTA TAGTACATTA GCTTTATTAT GTTTACTGAT		CGTTGTTATG AGTGCTTGGT ATAAGGAGCC GCAACAATAC TCACGAACCA TATTCCTCGG	TG AGTGCTTGGT A'	ATAAGGAGCC TATTCCTCGG
9241	CAATTCCATT GTTAAGGTAA	T A	TTCTTTTAG CTGCTAAAAG CGACGTCTTG TATTTTGATA ATTATACCAA GGATAAAATA AAGAAAATC GACGATTTTC GCTGCAGAAC ATAAAACTAT TAATATGGTT CCTATTTTAT	CGACGTCTTG GCTGCAGAAC	TATTTTGATA ATAAAACTAT	ATTATACCAA TAATATGGTT	GGATAAAATA CCTATTTTAT
9311	TCTTACGACT AGAATGCTGA	TCTTACGACT CTCCATACGA AGAATGCTGA GAGGTATGCT	TGATCTAGTT ACTAGATCAA	ACAACTATCA TGTTGATAGT	CAATTAAATC ATTGACTGCT AGAGATGCCG GTTAATTTAG TAACTGACGA TCTCTACGGC	ATTGACTGCT TAACTGACGA	AGAGATGCCG TCTCTACGGC
9381	GTACTTATGT	#	TTTATGACAT AAATACTGTA	CGCCTACAAA	TGACACTGAT AAAGTAGATT ACTGTGACTA TTTCATCTAA	AAAGTAGATT TTTCATCTAA	ATGA TACT
9451	CTCCACAGAG T GAGGTGTCTC A	# #	TTGATTGTAA ATACAGATAG TGAATCGACT ATAGACATAA TACTATCTGG ATCTACACAT AACTAACATT TATGTCTATC ACTTAGCTGA TATCTGTATT ATGATAGACC TAGATGTGTA	TGAATCGACT ATAGACATAA ACTTAGCTGA TATCTGTATT	ATAGACATAA TATCTGTATT	TACTATCTGG ATCTACACAT ATGATAGACC TAGATGTGTA	ATCTACACAT TAGATGTGTA

FIG. 14W

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GCGTAAT CATGGTCATA CGCATTA GTACCAGTAT	GAGCCGGAAG CATAAAGTGT CTCGGCCTTC GTATTTCACA	CTCACTGCCC GCTTTCGAGT GAGTGACGGG CGAAAGCTCA	AGAGGCGGTT TGCGTATTGG TCTCCGCCAA ACGCATAACC	GTCGTTCGGC TGCGGCGAGC GGTATCAGCT CAGCAAGCCG ACGCCGCTCG CCATAGTCGA	AAAGAACATG TGAGCAAAAG TTTCTTGTAC ACTCGTTTTC	GATAGGCTCC GCCCCCCTGA CTATCCGAGG CGGGGGGACT
GTATTAGAGC TTGGCGTAAT CATAATCTCG AACCGCATTA	CACAACATAC GTGTTGTATG	TTGCGTTGCG CTC AACGCAACGC GAG	ACCCCCCCC ACA TCCCCCCC TCT	GTCGTTCGGC TGC CAGCAAGCCG ACG		
ATAGTGAGTC TATCACTCAG	GTTATCCGCT CACAATTCCA CAATAGGCGA GTGTTAAGGT	CTCACATTAA GAGTGTAATT	GAATCGGCCA CTTAGCCGGT	GCTTCCTCGC TCACTGACTC GCTGCGCTCG CGAAGGAGCG AGTGACTGAG CGACGCGAGC	GAATCAGGGG ATAACGCAGG CTTAGTCCCC TATTGCGTCC	GGCCAGGAAC CGTAAAAAGG CCGCGTTGCT GGCGTTTTTC CCGGTCCT <u>T</u> G GCATTTTTCC GGCGCAACGA CCGCAAAAAG
CTAGTTAAGC TTGTCTCCCT GATCAATTCG AACAGGGA	GTTATCCGCT	AGTGAGCTAA TCACTCGATT	CTGCATTAAT GACGTAATTA	TCACTGACTC AGTGACTGAG	GTTATCCACA	CGTAAAAAGG
CTAGTTAAGC	GTGTGAAATT CACACTTTAA	GTGCCTAATG CACGGATTAC	GTCGTGCCAG CTGCATTAAT CAGCACGGTC GACGTAATTA	GCTTCCTCGC CGAAGGAGCG	CGGTAATACG GCCATTATGC	GGCCAGGAAC
TCACCAGAAA AGTGGTCTTT	GCTGTTTCCT CGACAAAGGA	AAAGCCTGGG TTTCGGACCC	CGGGAAACCT GCCCTTTGGA	GCGCTCTTCC	CACTCAAAGG GTGAGTTTCC	GCCAGCAAAA CGGTCGTTTT
9521	9591	9661	9731	9801	9871	9941

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ATACCAGGCG	CTGTCCGCCT	TGTAGGTCGT	CGGTAACTAT	AGGATTAGCA	CTAGAAGGAC
TATGGTCCGC	GACAGGCGGA	ACATCCAGCA	GCCATTGATA	TCCTAATCGT	GATCTTCCTG
GACTATAAAG	CCCTGCCGCT TACCGGATAC	CTCAGTTCGG	GCGCCTTATC	CACTGGTAAC	TACGGCTACA ATGCCGATGT
CTGATATTTC	GGGACGCCGA ATGGCCTATG	GAGTCAAGCC	CGCGGAATAG	GTGACCATTG	
GAGGTGGCGA AACCCGACAG GACTATAAAG ATACCAGGCG CTCCACCGCT TTGGGCTGTC CTGATATTTC TATGGTCCGC	CCCTGCCGCT	ATAGCTCACG CTGTAGGTAT CTCAGTTCGG TGTAGGTCGT TATCGAGTGC GACATCCATA GAGTCAAGCC ACATCCAGCA	TGCACGAACC CCCCGTTCAG CCCGACCGCT GCGCCTTATC ACGTGCTTGG GGGCCAAGTC GGGCTGGCGA CGCGGAATAG	TGGCAGCAGC ACCGTCGTCG	TCTTGAAGTG GTGGCCTAAC TACGGCTACA AGAACTTCAC CACCGGATTG ATGCCGATGT
GAGGTGGCGA	CCTGTTCCGA	ATAGCTCACG	CCCCGTTCAG	TTATCGCCAC	TCTTGAAGTG
CTCCACCGCT	GGACAAGGCT	TATCGAGTGC	GGGCCAAGTC	AATAGCGGTG	AGAACTTCAC
AAAAATCGAC GCTCAAGTCA GAGGTGGCGA AACCCGACAG GACTATAAAG ATACCAGGCG	GAAGCTCCCT CGTGCGCTCT CCTGTTCCGA CCCTGCCGCT TACCGGATAC CTGTCCGCCT	GGGAAGCGTG GCGCTTTCTC ATAGCTCACG CTGTAGGTAT CTCAGTTCGG TGTAGGTCGT		CCAACCCGGT AAGACACGAC TTATCGCCAC TGGCAGCAGC CACTGGTAAC AGGATTAGCA	TGTAGGCGGT GCTACAGAGT TCTTGAAGTG GTGGCCTAAC TACGGCTACA CTAGAAGGAC
TTTTTAGCTG CGAGTTCAGT CTCCACCGCT TTGGGCTGTC CTGATATTTC TATGGTCCGC	CTTCGAGGGA GCACGCGAGA GGACAAGGCT GGGACGGCGA ATGGCCTATG GACAGGCGGA	CCCTTCGCAC CGCGAAAGAG TATCGAGTGC GACATCCATA GAGTCAAGCC ACATCCAGCA		GGTTGGGCCA TTCTGTGCTG AATAGCGGTG ACCGTCGTCG GTGACCATTG TCCTAATCGT	ACATCCGCCA CGATGTCTCA AGAACTTCAC CACCGGATTG ATGCCGATGT GATCTTCCTG
AAAAATCGAC	GAAGCTCCCT	GGGAAGCGTG	CTGGGCTGTG	CCAACCCGGT	TGTAGGCGGT
TTTTAGCTG	CTTCGAGGGA	CCCTTCGCAC	GACCCGACAC	GGTTGGGCCA	ACATCCGCCA
CGAGCATCAC	TTTCCCCCTG	TTCTCCCTTC	TCGCTCCAAG	CGTCTTGAGT	GAGCGAGGTA
GCTCGTAGTG	AAAGGGGGAC	AAGAGGGAAG	AGCGAGGTTC	GCAGAACTCA	CTCGCTCCAT
10011	10081	10151	10221	10291	10361

FIG. 14Y

AGTATTTGGT ATCTGCGCTC TGCTGAAGCC AGTTACCTTC GGAAAAAGAG TTGGTAGCTC TTGATCCGGC TCATAAACCA TAGACGCGAG ACGACTTCGG TCAATGGAAG CCTTTTTCTC AACCATCGAG AACTAGGCCG

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	TTTGTTTGGT	GCCGACCATC	GCGACCATC GCCACCAAAA AAACAAAGGT TCGTCGTCTA ATGCGCGTCT TTTTTTCCTA	AAACAAACGT	TCGTCGTCTA	ATGCGCGTCT	TTTTTCCTA
10571	CTCAAGAAGA GAGTTCTTCT	TCCTTTGATC AGGAAAĊTAG		GGTCTGACGC CCAGACTGCG	TTTTCTACGG GGTCTGACGC TCAGTGGAAC GAAAACTCAC GTTAAGGGAT AAAAGATGCC CCAGACTGCG AGTCACCTTG CTTTTGAGTG CAATTCCCTA	GAAAACTCAC CTTTTGAGTG	GTTAAGGGAT CAATTCCCTA
10641	TTTGGTCATG AAACCAGTAC	<; ;	IGATTATCAA AAAGGATCTT CACCTAGATC CTTTTAAATT AAAAATGAAG TTTTAAATCA CCTAATAGTT TTTCCTAGAA GTGGATCTAG GAAAATTTAA TTTTTACTTC AAAATTTAGT	CACCTAGATC GTGGATCTAG	CACCTAGATC CTTTTAAATT GTGGATCTAG GAAAATTTAA	AAAAATGAAG TTTTAAATCA TTTTTACTTC AAAATTTAGT	TTTTAAATCA AAAATTTAGT
10711	ATCTAAAGTA TAGATTTCAT	TATATGAGTA ATATACTCAT	AACTTGGTCT TTGAACCAGA	GACAGTTACC CTGTCAATGG	AACTTGGTCT GACAGTTACC AATGCTTAAT TTGAACCAGA CTGTCAATGG TTACGAATTA	CAGTGAGGCA CCTATCTCAG GTCACTCCGT GGATAGAGTC	CCTATCTCAG GGATAGAGTC
10781	CGATCTGTCT GCTAGACAGA	ATTTCGTTCA TAAAGCAAGT	TCCATAGTTG AGGTATCAAC	CCTGACTCCC GGACTGAGGG	CGTCGTGTAG ATAACTACGA TACGGGAGGG GCAGCACATC TATTGATGCT ATGCCCTCCC	TCGTGTAG ATAACTACGA TACGGGAGGG AGCACATC TATTGATGCT ATGCCCTCCC	TACGGGAGGG ATGCCCTCCC
10851	CTTACCATCT	GGCCCAGTG	GCCCCAGTG CTGCAATGAT ACCGCGAGAC CCACGCTCAC CGGCTCCAGA TTTATCAGCA	ACCGCGAGAC TGGCGCTCTG	CCACGCTCAC	CGGCTCCAGA GCCGAGGTCT	TTTATCAGCA AAATAGTCGT

TTTGTTTGCA AGCAGCAGAT TACGCGCAGA AAAAAAGGAT

AAACAAACCA CCGCTGGTAG CGGTGGTTTT

10501

ATAAACCAGC CAGCCGGAAG GCCCGAGCGC AGAAGTGGTC CTGCAACTTT ATCCGCCTCC ATCCAGTCTA TATITICATIC GICCCCTIC CCGCTCGCG TCTTCACCAG GACCTTGAAA TAGGCGGAGG TAGGTCAGAI 10921

FIG. 14Z

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10991	TTAATTGTTG AATTAACAAC		CCGGGAAGCT AGAGTAAGTA GTTCGCCAGT TAATAGTTTG CGCAACGTTG TTGGCATTGC GGCCCTTCGA TCTCATTCAT CAAGCGGTCA ATTATCAAAC GCGTTGCAAC AACCGTAACG	GTTCGCCAGT CAAGCGGTCA	TAATAGTTTG ATTATCAAAC	CGCAACGTTG GCGTTGCAAC	TTGGCATTGC AACCGTAACG
11061		ki – i	TACAGGCATC GTGGTGTCAC GCTCGTCGTT TGGTATGGCT TCATTCAGCT CCGGTTCCCA ACGATCAAGG	TGCTATGCT ACCATACCGA	TCATTCAGCT AGTAAGTCGA	CCGGTTCCCA	ACGATCAAGG TGCTAGTTCC
11131	11131 CGAGTTACAT (CCTCAATGTA (CCTCAATGTA)	GATCCCCAT	CGAGTTACAT GATCCCCCAT GTTGTGCAAA AAAGCGGTTA GCTCCTTCGG TCCTCCGATC GTTGTCAGAA	AAAGCGGTTA	GCTCCTTCGG	TCCTCCGATC	GTTGTCAGAA CAACAGTCTT
11201		CGCAGTGTTA GCGTCACAAT	CGCAGTGTTA TCACTCATGG TTATGGCAGC ACTGCATAAT TCTCTTACTG TCATGCCATC	TTATGGCAGC AATACCGTCG	ACTGCATAAT TGACGTATTA	TCTCTTACTG AGAGAATGAC	TCATGCCATC AGTACGGTAG
11271	_	TTTCTGTGA	TTTTCTGTGA CTGGTGAGTA CTCAACCAAG TCATTCTGAG AATAGTGTAT GCGGCGACCG	CTCAACCAAG GAGTTGGTTC	TCATTCTGAG AGTAAGACTC	AATAGTGTAT TTATCACATA	GCGCCGACCG

AGTTGCTCTT GCCCGCCTC AATACGGGAT AATACCGCGC CACATAGCAG AACTTTAAAA GTGCTCATCA TTGAAATTTT CACGAGTAGT TTATGGCGCG GTGTATCGTC CGGCCGCAG TTATGCCCTA TCAACGAGAA

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11411	TTGGAAAACG TTCTTCGGGG CGAAAACTCT CAAGGATCTT ACCGCTGTTG AGATCCAGTT CGATGTAACC AACCTTTTGC AAGAAGCCCC GCTTTTGAGA GTTCCTAGAA TGGCGACAAC TCTAGGTCAA GCTACATTGG
11481	CACTCGTGCA CCCAACTGAT CTTCAGCATC TTTTACTTTC ACCAGCGTTT CTGGGTGAGC AAAAACAGGA GTGAGCACGT GGGTTGACTA GAAGTCGTAG AAAATGAAAG TGGTCGCAAA GACCCACTCG TTTTTGTCCT
11551	AGGCAAAATG CCGCAAAAAA GGGAATAAGG GCGACACGGA AATGTTGAAT ACTCATACTC TTCCTTTTTC TCCGTTTTAC GGCGTTTTTT CCCTTATTCC CGCTGTGCCT TTACAACTTA TGAGTATGAG AAGGAAAAAG
11621	AATATTATTG AAGCATTTAT CAGGGTTATT GTCTCATGAG CGGATACATA TTTGAATGTA TTTAGAAAAA TTATAATAAC TTCGTAAATA GTCCCAATAA CAGAGTACTC GCCTATGTAT AAACTTACAT AAATCTTTTT
11691	TAAACAAATA GGGGTTCCGC GCACATTTCC CCGAAAAGTG CCACCTGACG TCTAAGAAAC CATTATTATC ATTTGTTTAT CCCCAAGGCG CGTGTAAAGG GGCTTTTCAC GGTGGACTGC AGATTCTTTG GTAATAATAG
11761	ATGACATTAA CCTATAAAAA TAGGCGTATC ACGAGGCCCT TTCGTCTCGC GCGTTTCGGT GATGACGGTG TACTGTAATT GGATATTTT ATCCGCATAG TGCTCCGGGA AAGCAGAGCG CGCAAAGCCA CTACTGCCAC

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11831	AAAACCTCTG	ACACATGCAG	ACACATGCAG CTCCCGGAGA CGGTCACAGC TTGTCTGTAA GCGGATGCCG GGAGCAGACA	CGGTCACAGC	TTGTCTGTAA	GCGGATGCCG GGAGCAGACA	GGAGCAGACA
	TTTTGGAGAC	TGTGTACGTC	TGTGTACGTC GAGGGCCTCT GCCAGTGTCG AACAGACATT CGCCTACGGC CCTCGTCTGT	GCCAGTGTCG	AACAGACATT	CGCCTACGGC CCTCGTCTGT	CCTCGTCTGT
11901	AGCCCGTCAG	GGCGCGTCAG	CGGGTGTTGG	CGGGTGTCGG	GGCTGGCTTA	ACTATGCGGC ATCAGAGCAG	ATCAGAGCAG
	TCGGGCAGTC	CCGCGCAGTC	GCCCACAACC	GCCCACAGCC	CCGACCGAAT	TGATACGCCG TAGTCTCGTC	TAGTCTCGTC
11971	11971 ATTGTACTGA	GAGTGCACCA	GAGTGCACCA TATGCGGTGT GAAATACCGC ACAGATGCGT AAGGAGAAAA TACCGCATCA	GAAATACCGC	GAAATACCGC ACAGATGCGT AAGGAGAAAA TACCGCATCA	aaggagaaaa	TACCGCATCA
	TAACATGACT	CTCACGTGGT	CTCACGTGGT ATACGCCACA CTTTATGGCG TGTCTACGCA TTCCTCTTTT ATGGCGTAGT	CTTTATGGCG	CTTTATGGCG TGTCTACGCA TTCCTCTTTT ATGGCGTAGT	Ttcctctttt	ATGGCGTAGT
12041	12041 GGCGCCATTC	GCCATTCAGG	GCCATTCAGG CTGCGCAACT GTTGGGAAGG GCGATCGGTG CGGGCCTCTT CGCTATTACG	GTTGGGAAGG	GTTGGGAAGG GCGATCGGTG CGGGCCTCTT CGCTATTACG	CGGGCCTCTT	CGCTATTACG
	CCGCGGTAAG	CGGTAAGTCC	CGGTAAGTCC GACGCGTTGA CAACCCTTCC CGCTAGCCAC GCCGGAGAA GCGATAATGC	CAACCCTTCC	CAACCCTTCC CGCTAGCCAC GCCGGAGAA GCGATAATGC	GCCCGGAGAA	GCGATAATGC
12111	CCAGCTGGCG	AAAGGGGGAT TTTCCCCCTA	AAAGGGGGAT GTGCTGCAAG GCGATTAAGT TGGGTAACGC CAGGGTTTTC CCAGTCACGA TTTCCCCCTA CACGACGTTC CGCTAATTCA ACCCATTGCG GTCCCAAAAG GGTCAGTGCT	GCGATTAAGT CGCTAATTCA	TGGGTAACGC ACCCATTGCG	CAGGGTTTTC GTCCCAAAAG	ccagtcacga ggtcagtgct
12181	CGTTGTAAAA GCAACATTTT	CGACGGCCAG GCTGCCGGTC	CGACGCCCAG TGAATTGGAT TTAGGTGACA CTATA GCTGCCGGTC ACTTAACCTA AATCCACTGT GATAT	TTAGGTGACA AATCCACTGT	CTATA GATAT		

FIG. 14AC

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Text File of pLW-48 and the Included Individual HIV Genes and Their Promoters

Entire pLW-48 plasmid sequence:

GAATTCGTTGGTGGTCGCCATGGATGGTGTTATTGTATACTGTCTAAACGCG TTAGTAAAACATGGCGAGGAAATAAATCATATAAAAAATGATTTCATGATTAA ACCATGTTGTGAAAAAGTCAAGAACGTTCACATTGGCGGACAATCTAAAAAC AATACAGTGATTGCAGATTTGCCATATATGGATAATGCGGTATCCGATGTAT GCAATTCACTGTATAAAAAGAATGTATCAAGAATATCCAGATTTGCTAATTTG ATAAAGATAGATGACGATGACAAGACTCCTACTGGTGTATATAATTATTTTAA ACCTAAAGATGCCATTCCTGTTATTATATCCATAGGAAAGGATAGAGATGTTT GTGAACTATTAATCTCATCTGATAAAGCGTGTGCGTGTATAGAGTTAAATTCA TATAAAGTAGCCATTCTTCCCATGGATGTTTCCTTTTTTACCAAAGGAAATGC **ATCATTGATTATTCTCCTGTTTGATTTCTCTATCGATGCGGCACCTCTCTTAA** GAAGTGTAACCGATAATAATGTTATTATATCTAGACACCAGCGTCTACATGA CGAGCTTCCGAGTTCCAATTGGTTCAAGTTTTACATAAGTATAAAGTCCGAC TGATAATAGAACTTACGCAAATATTAGCAAAAATATATTAGACAATACTACAA TTAACGATGAGTGTAGATGCTGTTATTTTGAACCACAGATTAGGATTCTTGAT AGAGATGAGATGCTCAATGGATCATCGTGTGATATGAACAGACATTGTATTA TGATGAATTTACCTGATGTAGGCGAATTTGGATCTAGTATGTTGGGGAAATA TGAACCTGACATGATTAAGATTGCTCTTTCGGTGGCTGGGTACCAGGCGCG CCTTTCATTTTGTTTTTTCTATGCTATAAATGGTACGTCCTGTAGAAACCCC AACCCGTGAAATCAAAAACTCGACGGCCTGTGGGCATTCAGTCTGGATCG CGAAAACTGTGGAATTGATCAGCGTTGGTGGGAAAGCGCGTTACAAGAAAG CCGGGCAATTGCTGTGCCAGGCAGTTTTAACGATCAGTTCGCCGATGCAGA TATTCGTAATTATGCGGGCAACGTCTGGTATCAGCGCGAAGTCTTTATACCG **AAAGGTTGGGCAGGCCAGCGTATCGTGCTGCGTTTCGATGCGGTCACTCAT** TACGGCAAAGTGTGGGTCAATAATCAGGAAGTGATGGAGCATCAGGGCGG CTATACGCCATTTGAAGCCGATGTCACGCCGTATGTTATTGCCGGGAAAAG GCCGGGAATGGTGATTACCGACGAAAACGGCAAGAAAAAGCAGTCTTACTT CCATGATTTCTTTAACTATGCCGGAATCCATCGCAGCGTAATGCTCTACACC ACGCCGAACACCTGGGTGGACGATATCACCGTGGTGACGCATGTCGCGCA AGACTGTAACCACGCGTCTGTTGACTGGCAGGTGGTGGCCAATGGTGATGT CAGCGTTGAACTGCGTGATGCGGATCAACAGGTGGTTGCAACTGGACAAG GCACTAGCGGGACTTTGCAAGTGGTGAATCCGCACCTCTGGCAACCGGGT GATATCTACCCGCTTCGCGTCGGCATCCGGTCAGTGGCAGTGAAGGGCGA ACAGTTCCTGATTAACCACAAACCGTTCTACTTTACTGGCTTTGGTCGTCAT GAAGATGCGGACTTGCGTGGCAAAGGATTCGATAACGTGCTGATGGTGCAC GACCACGCATTAATGGACTGGATTGGGGCCAACTCCTACCGTACCTCGCAT TACCCTTACGCTGAAGAGATGCTCGACTGGCCAGATGAACATGGCATCGTG

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GTGATTGATGAAACTGCTGCTGTCGGCTTTAACCTCTCTTTAGGCATTGGTT TCGAAGCGGCAACAAGCCGAAAGAACTGTACAGCGAAGAGGCAGTCAÁC GGGGAAACTCAGCAAGCGCACTTACAGGCGATTAAAGAGCTGATAGCGCGT GACAAAACCACCCAAGCGTGGTGATGTGGAGTATTGCCAACGAACCGGAT ACCCGTCCGCAAGGTGCACGGGAATATTTCGCGCCACTGGCGGAAGCAAC GCGTAAACTCGACCCGACGCGTCCGATCACCTGCGTCAATGTAATGTTCTG CGACGCTCACACCGATACCATCAGCGATCTCTTTGATGTGCTGTGCCTGAA CCGTTATTACGGATGGTATGTCCAAAGCGGCGATTTGGAAACGGCAGAGAA GGTACTGGAAAAAGAACTTCTGGCCTGGCAGGAGAAACTGCATCAGCCGAT TATCATCACCGAATACGGCGTGGATACGTTAGCCGGGCTGCACTCAATGTA CACCGACATGTGGAGTGAAGAGTATCAGTGTGCATGGCTGGATATGTATCA CCGCGTCTTTGATCGCGTCAGCGCCGTCGTCGGTGAACAGGTATGGAATTT CGCCGATTTTGCGACCTCGCAAGGCATATTGCGCGTTGGCGGTAACAAGAA AGGGATCTTCACTCGCGACCGCAAACCGAAGTCGGCGGCTTTTCTGCTGCA AAAACGCTGGACTGGCATGAACTTCGGTGAAAAACCGCAGCAGGGAGGCA ATAGAACTTACGCAAATATTAGCAAAAATATATTAGACAATACTACAATTAAC GATGAGTGTAGATGCTGTTATTTTGAACCACAGATTAGGATTCTTGATAGAG ATGAGATGCTCAATGGATCATCGTGTGATATGAACAGACATTGTATTATGAT GAATTTACCTGATGTAGGCGAATTTGGATCTAGTATGTTGGGGAAATATGAA CCTGACATGATTAAGATTGCTCTTTCGGTGGCTGGCGGCCCGCTCGAGTAA AAAATGAAAAAATATTCTAATTTATAGGACGGTTTTGATTTTCTTTTTTCTAT GCTATAAATAATAAATAGCGGCCGCACCATGAAAGTGAAGGGGATCAGGAA GAATTATCAGCACTTGTGGAAATGGGGCATCATGCTCCTTGGGATGTTGATG **ATCTGTAGTGCTGTAGAAAATTTGTGGGTCACAGTTTATTATGGGGTACCTG** TGTGGAAAGAAGCAACCACCACTCTATTTTGTGCATCAGATGCTAAAGCATA TGATACAGAGGTACATAATGTTTGGGCCACACATGCCTGTGTACCCACAGA CCCCAACCCACAAGAAGTAGTATTGGAAAATGTGACAGAAAATTTTAACATG TGGAAAAATAACATGGTAGAACAGATGCATGAGGATATAATCAGTTTATGGG ATCAAAGCCTAAAGCCATGTGTAAAATTAACCCCACTCTGTGTTACTTTAAAT TGCACTGATTTGAGGAATGTTACTAATATCAATAATAGTAGTGAGGGAATGA GAGGAGAAATAAAAACTGCTCTTTCAATATCACCACAAGCATAAGAGATAA GGTGAAGAAAGACTATGCACTTTTcTATAGACTTGATGTAGTACCAATAGATA ATGATAATACTAGCTATAGGTTGATAAATTGTAATACCTCAACCATTACACAG GCCTGTCCAAAGGTATCCTTTGAGCCAATTCCCATACATTATTGTACCCCGG CTGGTTTTGCGATTCTAAAGTGTAAAGACAAGAAGTTCAATGGAACAGGGCC ATGTAAAAATGTCAGCACAGTACAATGTACACATGGAATTAGGCCAGTAGTG TCAACTCAACTGCTGTTAAATGGCAGTCTAGCAGAAGAAGAGGTAGTAATTA GATCTAGTAATTTCACAGACAATGCAAAAAACATAATAGTACAGTTGAAAGAA TCTGTAGAAATTAATTGTACAAGACCCAACAACAATACAAGGAAAAGTATAC ATATAGGACCAGGAAGAGCATTTTATACAACAGGAGAAATAATAGGAGATAT AAGACAAGCACATTGCAACATTAGTAGAACAAAATGGAATAACACTTTAAAT CAAATAGCTACAAAATTAAAAGAACAATTTGGGAATAATAAAACAATAGTCTT TAATCAATCCTCAGGAGGGGACCCAGAAATTGTAATGCACAGTTTTAATTGT GGAGGGGAATTCTTCTACTGTAATTCAACACACTGTTTAATAGTACTTGGA ATTTTAATGGTACTTGGAATTTAACACAATCGAATGGTACTGAAGGAAATGA

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CACTATCACACTCCCATGTAGAATAAAACAAATTATAAATATGTGGCAGGAA GTAGGAAAAGCAATGTATGCCCCTCCCATCAGAGGACAAATTAGATGCTCAT CAAATATTACAGGGCTAATATTAACAAGAGATGGTGGAACTAACAGTAGTGG GTCCGAGATCTTCAGACCTGGGGGGGGGGAGATATGAGGGACAATTGGAGAA GTGAATTATAAATATAAAGTAGTAAAAATTGAACCATTAGGAGTAGCACCC ACCAAGGCAAAAAGAAGAGTGGTGCAGAGAGAAAAAAGAGCAGTGGGAAC GATAGGAGCTATGTTCCTTGGGTTCTTGGGAGCAGCAGGAAGCACTATGGG CGCAGCGTCAATAACGCTGACGGTACAGGCCAGACTATTATTGTCTGGTAT AGTGCAACAGCAGAACAATTTGCTGAGGGCTATTGAGGCGCAACAGCATCT GTTGCAACTCACAGTCTGGGGCATCAAGCAGCTCCAGGCAAGAGTCCTGG CTGTGGAAAGATACCTAAGGGATCAACAGCTCCTAGGGATTTGGGGTTGCT CTGGAAAACTCATCTGCACCACTGCTGTGCCTTGGAATGCTAGTTGGAGTA GAGAAATCGAAAATTACACAGGCTTAATATACACCTTAATTGAGGAATCGCA GAACCAACAAGAAAAGAATGAACAAGACTTATTAGCATTAGATAAGTGGGCA AGTTTGTGGAATTGGTTTGACATATCAAATTGGCTGTGGTATGTAAAAATCTT CATAATGATAGTAGGAGGCTTGATAGGTTTAAGAATAGTTTTTACTGTACTTT CTATAGTAAATAGAGTTAGGCAGGGATACTCACCATTGTCATTTCAGACCCA CCTCCCAGCCCGAGGGGACCCGACAGGCCCGAAGGAATCGAAGAAGAAG GTGGAGACAGAGCTAATTTTTATGCGGCCGCTGGTACCCAACCTAAAAATT GAAAATAAATACAAAGGTTCTTGAGGGTTGTGTTAAATTGAAAGCGAGAAAT AATCATAAATAAGCCCGGGGATCCTCTAGAGTCGACACCATGGGTGCGAGA GCGTCAGTATTAAGCGGGGGAGAATTAGATCGATGGGAAAAAATTCGGTTA AGGCCAGGGGAAAGAAAAATATAAATTAAAACATATAGTATGGGCAAGCA GGGAGCTAGAACGATTCGCAGTTAATCCTGGCCTGTTAGAAACATCAGAAG GCTGTAGACAAATACTGGGACAGCTACAACCATCCCTTCAGACAGGATCAG AAGAACTTAGATCATTATATAATACAGTAGCAACCCTCTATTGTGTGCATCAA AGGATAGAGATAAAAGACACCAAGGAAGCTTTAGACAAGATAGAGGAAGAG CAAAACAAAAGTAAGAAAAAAGCACAGCAGCAGCAGCTGACACAGGACAC AGCAATCAGGTCAGCCAAAATTACCCTATAGTGCAGAACATCCAGGGGCAA ATGGTACATCAGGCCATATCACCTAGAACTTTAAATGCATGGGTAAAAGTAG TAGAAGAGAAGGCTTTCAGCCCAGAAGTGATACCCATGTTTTCAGCATTATC **AGAAGGAGCCACCCACAAGATTTAAACACCATGCTAAACACAGTGGGGGG** ACATCAAGCAGCCATGCAAATGTTAAAAGAGACCATCAATGAGGAAGCTGC AGAATGGGATAGAGTGCATCCAGTGCATGCAGGCCTATTGCACCAGGCCA GATGAGAGAACCAAGGGGAAGTGACATAGCAGGAACTACTAGTACCCTTCA GGAACAAATAGGATGGATGACAAATAATCCACCTATCCCAGTAGGAGAAATT TATAAAAGATGGATAATCCTGGGATTAAATAAAATAGTAAGAATGTATAGCCC TACCAGCATTCTGGACATAAGACAAGGACCAAAAGAACCCTTTAGAGACTAT GTAGACCGGTTCTATAAAACTCTAAGAGCCGAGCAAGCTTCACAGGAGGTA **AAAAATTGGATGACAGAAACCTTGTTGGTCCAAAATGCGAACCCAGATTGTA** AGACTATTTTAAAAGCATTGGGACCAGCGGCTACACTAGAAGAAATGATGAC AGCATGTCAGGGAGTAGGAGGACCCGGCCATAAGGCAAGAGTTTTGGCTG AAGCAATGAGCCAAGTAACAAATTCAGCTACCATAATGATGCAGAGAGGCA ATTTTAGGAACCAAAGAAAGATTGTTAAGTGTTTCAATTGTGGCAAAGAAGG GCACACAGCCAGAAATTGCAGGGCCCCTAGGAAAAAGGGCTGTTGGAAAT

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GTGGAAAGGAAGGACACCAAATGAAAGATTGTACTGAGAGACAGGCTAATT TTTTAGGGAAGATCTGGCCTTCCTACAAGGGAAGGCCAGGGAATTTTCTTCA GAGCAGACCAGAGCCAACAGCCCCACAGAAGAGAGCTTCAGGTCTGGGG TAGAGACAACAACTCCCCCTCAGAAGCAGGAGCCGATAGACAAGGAACTGT ATCCTTTAACTTCCCTCAGATCACTCTTTGGCAACGACCCCTCGTCACAATA AAGATAGGGGGCAACTAAAGGAAGCTCTATTAGATACAGGAGCAGATGAT ACAGTATTAGAAGAAATGAGTTTGCCAGGAAGATGGAAACCAAAAATGATAG GGGGAATTGGAGGTTTTATCAAAGTAAGACAGTATGATCAGATACTCATAGA AATCTGTGGACATAAAGCTATAGGTACAGTATTAGTAGGACCTACACCTGTC AACATAATTGGAAGAAATCTGTTGACTCAGATTGGTTGCACTTTAAATTTTCC CCAAAAGTTAAACAATGGCCATTGACAGAAGAAAAAATAAAAGCATTAGTAG AAATTTGTACAGAAATGGAAAAGGAAGGGAAAATTTCAAAAATTGGGCCTGA GAATCCATACAATACTCCAGTATTTGCCATAAAGAAAAAAGACAGTACTAAAT GGAGGAAATTAGTAGATTTCAGAGAACTTAATAAGAGAACTCAAGACTTCTG GGAAGTTCAATTAGGAATACCACATCCCGCAGGGTTAAAAAAGAAAAATCA GTAACAGTACTGGATGTGGGTGATGCATATTTTTCAGTTCCCTTAGATGAAG ACTTCAGGAAGTATACTGCATTTACCATACCTAGTATAAACAATGAGACACC AGGGATTAGATATCAGTACAATGTGCTTCCACAGGGATGGAAAGGATCACC AGCAATATTCCAAAGTAGCATGACAAAAATCTTAGAGCCTTTTAAAAAAACAAA TTAGAAATAGGGCAGCATAGAACAAAAATAGAGGAGCTGAGACAACATCTG TTCCTTTGGATGGGTTATGAACTCCATCCTGATAAATGGACAGTACAGCCTA TAGTGCTGCCAGAAAAAGACAGCTGGACTGTCAATGACATACAGAAGTTAG TGGGGAAATTGAATACCGCAAGTCAGATTTACCCAGGGATTAAAGTAAGGC AATTATGTAAACTCCTTAGAGGAACCAAAGCACTAACAGAAGTAATACCACT AACAGAAGAAGCAGAGCTAGAACTGGCAGAAAACAGAGAGATTCTAAAAGA ACCAGTACATGGAGTGTATTATGACCCATCAAAAGACTTAATAGCAGAAATA CAGAAGCAGGGCAAGGCCAATGGACATATCAAATTTATCAAGAGCCATTT AAAAATCTGAAAACAGGAAAATATGCAAGAATGAGGGGTGCCCACACTAAT GATGTAAAACAATTAACAGAGGCAGTGCAAAAAATAACCACAGAAAGCATAG TAATATGGGGAAAGACTCCTAAATTTAAACTACCCATACAAAAGGAAACATG GGAAACATGGTGGACAGAGTATTGGCAAGCCACCTGGATTCCTGAGTGGGA CCCATAGTAGGAGCAGAAACCTTCTATGTAGATGGGGCAGCTAACAGGGAG ACTAAATTAGGAAAAGCAGGATATGTTACTAACAAAGGAAGACAAAAGGTTG TCCCCCTAACTAACACAACAAATCAGAAAACTCAGTTACAAGCAATTTATCTA GCTTTGCAGGATTCAGGATTAGAAGTAAACATAGTAACAGACTCACAATATG CATTAGGAATCATTCAAGCACAACCAGATAAAAGTGAATCAGAGTTAGTCAA TCAAATAATAGAGCAGTTAATAAAAAAGGAAAAGGTCTATCTGGCATGGGTA CCAGCACACAAAGGAATTGGAGGAAATGAACAAGTAGATAAATTAGTCAGT GCTGGAATCAGGAAAATACTATTTTTAGATGGAATAGATAAGGCCCAAGATG AACATTAGTTTTTATGTCGACCTGCAGGGAAAGTTTTATAGGTAGTTGATAG AACAAAATACATAATTTTGTAAAAATAAATCACTTTTTATACTAATATGACACG ATTACCAATACTTTTGTTACTAATATCATTAGTATACGCTACACCTTTTCCTCA

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GACATCTAAAAAAATAGGTGATGATGCAACTTTATCATGTAATCGAAATAATA CAAATGACTACGTTGTTATGAGTGCTTGGTATAAGGAGCCCAATTCCATTAT TCTTTTAGCTGCTAAAAGCGACGTCTTGTATTTTGATAATTATACCAAGGATA AAATATCTTACGACTCTCCATACGATGATCTAGTTACAACTATCACAATTAAA TCATTGACTGCTAGAGATGCCGGTACTTATGTATGTGCATTCTTTATGACATC GCCTACAAATGACACTGATAAAGTAGATTATGAAGAATACTCCACAGAGTTG ATTGTAAATACAGATAGTGAATCGACTATAGACATAATACTATCTGGATCTAC ACATTCACCAGAAACTAGTTAAGCTTGTCTCCCTATAGTGAGTCGTATTAGA GCTTGGCGTAATCATGGTCATAGCTGTTTCCTGTGTGAAATTGTTATCCGCT CACAATTCCACACAACATACGAGCCGGAAGCATAAAGTGTAAAGCCTGGGG TTCGAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGC GCGGGGAGAGGCGGTTTGCGTATTGGGCGCTCTTCCGCTTCCTCGCTCAC TGACTCGCTGCGCTCGTTCGGCTGCGGCGAGCGGTATCAGCTCACT CAAAGGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAAGA ACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCG TTGCTGGCGTTTTTCGATAGGCTCCGCCCCCTGACGAGCATCACAAAAAT CGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAG GCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGACCCTGCCG CTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCT CATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCGCTCCAAG CTGGGCTGTGCACGAACCCCCGTTCAGCCCGACCGCTGCGCCTTATC CGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACT GGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTG CTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGGACAG TATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGG TAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTT TGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTG ATCTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACTCACGTTAAGGG ATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATTA AAAATGAAGTTTTAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACA GTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTCG TTCATCCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAG GGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTCA CCGGCTCCAGATTTATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAGCG CAGAAGTGGTCCTGCAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTGC CGGGAAGCTAGAGTAGTTCGCCAGTTAATAGTTTGCGCAACGTTGTT GGCATTGCTACAGGCATCGTGGTGTCACGCTCGTCGTTTGGTATGGCTTCA TTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGT TGGCCGCAGTGTTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTAC TGTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAG TCATTCTGAGAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCA ATACGGGATAATACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATCATTG GAAAACGTTCTTCGGGGCGAAAACTCTCAAGGATCTTACCGCTGTTGAGAT CCAGTTCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCATCTTTTAC

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TITCACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAA
AAAGGGAATAAGGGCGACACGGAAATGTTGAATACTCATACTCTTCTTTT
CAATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACATATT
TGAATGTATT.TAGAAAAATAAACAAATAGGGGTTCCGCGCACATTTCCCCGA
AAAGTGCCACCTGACGTCTAAGAAACCATTATTATCATGACATTAACCTATAA
AAATAGGCGTATCACGAGGCCCTTTCGTCTCGCGCGTTTCGGTGATGACGG
TGAAAACCTCTGACACATGCAGCTCCCGGAGACGGTCACAGCTTGTCTGTA
AGCGGATGCCGGGAGCAGACAAGCCCGTCAGGGCGCGTCAGCGGGTGTT
GGCGGGTGTCGGGGGCTGGCTTAACTATGCGGCATCAGAGCAGATTGTACT
GAGAGTGCACCATATGCGGTGTGAAATACCGCACAGATGCGTAAGGAGAA
ATACCGCATCAGGCGCCATTCGCCATTCAGGCTGCCAACTGTTGGGAAGG
GCGATCGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGAT
GTGCTGCAAGGCGATTAAGTTGGGTAACGCCAGGTTTTCCCAGTCACGAC
GTTGTAAAACGACGCCAGTGAATTGGATTTAGGTGACACTATA

New Psyn II Promoter which controls ADA envelope expression:

TAAAAAATGAAAAAATATTCTAATTTATAGGACGGTTTTGATTTTCTTTTTTC
TATGCTATAAATAATAAATA

ADA envelope truncated:

ATGAAAGTGAAGGGGATCAGGAAGAATTATCAGCACTTGTGGAAATGGGGC ATCATGCTCCTTGGGATGTTGATGATCTGTAGTGCTGTAGAAAATTTGTGGG TCACAGTTTATTATGGGGTACCTGTGTGGAAAGAAGCAACCACCACTCTATT TTGTGCATCAGATGCTAAAGCATATGATACAGAGGTACATAATGTTTGGGCC ACACATGCCTGTGTACCCACAGACCCCACCACAAGAAGTAGTATTGGAA AATGTGACAGAAAATTTTAACATGTGGAAAAATAACATGGTAGAACAGATGC ATGAGGATATAATCAGTTTATGGGATCAAAGCCTAAAGCCATGTGTAAAATT AACCCCACTCTGTGTTACTTTAAATTGCACTGATTTGAGGAATGTTACTAATA TCAATAATAGTAGTGAGGGAATGAGAGGAGAAATAAAAAACTGCTCTTTCAA TATCACCACAAGCATAAGAGATAAGGTGAAGAAAGACTATGCACTTTTCTAT AGACTTGATGTAGTACCAATAGATAATGATAATACTAGCTATAGGTTGATAAA TTGTAATACCTCAACCATTACACAGGCCTGTCCAAAGGTATCCTTTGAGCCA ATTCCCATACATTATTGTACCCCGGCTGGTTTTGCGATTCTAAAGTGTAAAG ACAAGAAGTTCAATGGAACAGGGCCATGTAAAAATGTCAGCACAGTACAAT GTACACATGGAATTAGGCCAGTAGTGTCAACTCAACTGCTGTTAAATGGCAG TCTAGCAGAAGAAGAGGTAGTAATTAGATCTAGTAATTTCACAGACAATGCA CAACAACAATACAAGGAAAAGTATACATATAGGACCAGGAAGAGCATTTTAT ACAACAGGAGAAATAATAGGAGATATAAGACAAGCACATTGCAACATTAGTA GAACAAAATGGAATAACACTTTAAATCAAATAGCTACAAAATTAAAAGAACAA TTTGGGAATAATAAAACAATAGTCTTTAATCAATCCTCAGGAGGGGACCCAG AAATTGTAATGCACAGTTTTAATTGTGGAGGGGAATTCTTCTACTGTAATTCA ACACAACTGTTTAATAGTACTTGGAATTTTAATGGTACTTGGAATTTAACACA

FIG. 15F

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ATCGAATGGTACTGAAGGAAATGACACTATCACACTCCCATGTAGAATAAAA CAAATTATAAATATGTGGCAGGAAGTAGGAAAAGCAATGTATGCCCCTCCCA TCAGAGGACAAATTAGATGCTCATCAAATATTACAGGGCTAATATTAACAAG AGATGGTGGAACTAACAGTAGTGGGTCCGAGATCTTCAGACCTGGGGGAG GAGATATGAGGGACAATTGGAGAAGTGAATTATATAAATATAAAGTAGTAAA AATTGAACCATTAGGAGTAGCACCCACCAAGGCAAAAAGAAGAGTGGTGCA GAGAGAAAAAGAGCAGTGGGAACGATAGGAGCTATGTTCCTTGGGTTCTT GGGAGCAGCAGGAAGCACTATGGGCGCAGCGTCAATAACGCTGACGGTAC AGGCCAGACTATTATTGTCTGGTATAGTGCAACAGCAGAACAATTTGCTGAG GGCTATTGAGGCGCAACAGCATCTGTTGCAACTCACAGTCTGGGGCATCAA GCAGCTCCAGGCAAGAGTCCTGGCTGTGGAAAGATACCTAAGGGATCAACA GCTCCTAGGGATTTGGGGTTGCTCTGGAAAACTCATCTGCACCACTGCTGT GCCTTGGAATGCTAGTTGGAGTAATAAAACTCTGGATATGATTTGGGATAAC ATGACCTGGATGGAGTGGGAAAGAGAAATCGAAAATTACACAGGCTTAATAT ACACCTTAATTGAGGAATCGCAGAACCAACAAGAAAGAATGAACAAGACTT ATTAGCATTAGATAAGTGGGCAAGTTTGTGGAATTGGTTTGACATATCAAATT GGCTGTGGTATGTAAAAATCTTCATAATGATAGTAGGAGGCTTGATAGGTTT AAGAATAGTTTTTACTGTACTTTCTATAGTAAATAGAGTTAGGCAGGGATACT CACCATTGTCATTTCAGACCCACCTCCCAGCCCCGAGGGGACCCGACAGG CCCGAAGGAATCGAAGAAGAAGGTGGAGACAGAGAC

PmH5 promoter (which controls HXB2 gag pol expression):

AAAAATTGAAAATAAATACAAAGGTTCTTGAGGGTTGTGTTAAATTGAAAGC GAGAAATAATCATAAATA

HXB2 gag pol (with safety mutations, Δ integrase):

ATGGGTGCGAGAGCGTCAGTATTAAGCGGGGGAGAATTAGATCGATGGGA AAAAATTCGGTTAAGGCCAGGGGGAAAGAAAAAATATAAATTAAAACATATA GTATGGGCAAGCAGGAGCTAGAACGATTCGCAGTTAATCCTGGCCTGTTA GAAACATCAGAAGGCTGTAGACAAATACTGGGACAGCTACAACCATCCCTT CAGACAGGATCAGAAGAACTTAGATCATTATATAATACAGTAGCAACCCTCT ATTGTGTGCATCAAAGGATAGAGATAAAAGACACCAAGGAAGCTTTAGACAA TGACACAGGACACAGCAATCAGGTCAGCCAAAATTACCCTATAGTGCAGAA CATCCAGGGGCAAATGGTACATCAGGCCATATCACCTAGAACTTTAAATGCA TGGGTAAAAGTAGTAGAAGAGAAGGCTTTCAGCCCAGAAGTGATACCCATG TTTTCAGCATTATCAGAAGGAGCCACCCCACAAGATTTAAACACCATGCTAA ACACAGTGGGGGACATCAAGCAGCCATGCAAATGTTAAAAGAGACCATCA ATTGCACCAGGCCAGATGAGAGAACCAAGGGGAAGTGACATAGCAGGAAC TACTAGTACCCTTCAGGAACAAATAGGATGGATGACAAATAATCCACCTATC TAAGAATGTATAGCCCTACCAGCATTCTGGACATAAGACAAGGACCAAAAGA ACCCTTTAGAGACTATGTAGACCGGTTCTATAAAACTCTAAGAGCCGAGCAA

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GCTTCACAGGAGGTAAAAAATTGGATGACAGAAACCTTGTTGGTCCAAAATG CGAACCCAGATTGTAAGACTATTTTAAAAGCATTGGGACCAGCGGCTACACT AGAAGAAATGATGACAGCATGTCAGGGGGGTAGGAGGACCCGGCCATAAGG CAAGAGTTTTGGCTGAAGCAATGAGCCAAGTAACAAATTCAGCTACCATAAT GATGCAGAGAGGCAATTTTAGGAACCAAAGAAAGATTGTTAAGTGTTTCAAT TGTGGCAAAGAAGGGCACACAGCCAGAAATTGCAGGGCCCCTAGGAAAAA GGGCTGTTGGAAATGTGGAAAGGAAGGACACCAAATGAAAGATTGTACTGA GAGACAGGCTAATTTTTTAGGGAAGATCTGGCCTTCCTACAAGGGAAGGCC AGGGAATTTTCTTCAGAGCAGACCAGAGCCAACAGCCCCACCAGAAGAGAG CTTCAGGTCTGGGGTAGAGACAACACTCCCCCTCAGAAGCAGGAGCCGAT AGACAAGGAACTGTATCCTTTAACTTCCCTCAGATCACTCTTTGGCAACGAC CCCTCGTCACAATAAAGATAGGGGGGGGCAACTAAAGGAAGCTCTATTAGATA CAGGAGCAGATGATACAGTATTAGAAGAAATGAGTTTGCCAGGAAGATGGA AACCAAAAATGATAGGGGGAATTGGAGGTTTTATCAAAGTAAGACAGTATGA TCAGATACTCATAGAAATCTGTGGACATAAAGCTATAGGTACAGTATTAGTA GGACCTACACCTGTCAACATAATTGGAAGAAATCTGTTGACTCAGATTGGTT GCACTTTAAATTTTCCCATTAGCCCTATTGAGACTGTACCAGTAAAATTAAAG CCAGGAATGGATGGCCCAAAAGTTAAACAATGGCCATTGACAGAAGAAAAA CAAAAATTGGGCCTGAGAATCCATACAATACTCCAGTATTTGCCATAAAGAA AAAAGACAGTACTAAATGGAGGAAATTAGTAGATTTCAGAGAACTTAATAAG AGAACTCAAGACTTCTGGGAAGTTCAATTAGGAATACCACATCCCGCAGGG TTAAAAAAGAAAAATCAGTAACAGTACTGGATGTGGGTGATGCATATTTTTC AGTTCCCTTAGATGAAGACTTCAGGAAGTATACTGCATTTACCATACCTAGT ATAAACAATGAGACACCAGGGATTAGATATCAGTACAATGTGCTTCCACAGG GATGGAAAGGATCACCAGCAATATTCCAAAGTAGCATGACAAAAATCTTAGA GCCTTTTAAAAAACAAAATCCAGACATAGTTATCTATCAATACATGAACGATT TGTATGTAGGATCTGACTTAGAAATAGGGCAGCATAGAACAAAAATAGAGGA GCTGAGACAACATCTGTTGAGGTGGGGACTTACCACACCAGACAAAAAACA TCAGAAAGAACCTCCATTCCTTTGGATGGGTTATGAACTCCATCCTGATAAA TGGACAGTACAGCCTATAGTGCTGCCAGAAAAAGACAGCTGGACTGTCAAT GACATACAGAAGTTAGTGGGGAAATTGAATACCGCAAGTCAGATTTACCCA GGGATTAAAGTAAGGCAATTATGTAAACTCCTTAGAGGAACCAAAGCACTAA CAGAAGTAATACCACTAACAGAAGAAGCAGAGCTAGAACTGGCAGAAAACA GAGAGATTCTAAAAGAACCAGTACATGGAGTGTATTATGACCCATCAAAAGA CTTAATAGCAGAAATACAGAAGCAGGGGCAAGGCCAATGGACATATCAAAT TTATCAAGAGCCATTTAAAAATCTGAAAACAGGAAAATATGCAAGAATGAGG GGTGCCCACACTAATGATGTAAAACAATTAACAGAGGCAGTGCAAAAAATAA CCACAGAAAGCATAGTAATATGGGGAAAGACTCCTAAATTTAAACTACCCAT ACAAAAGGAAACATGGGAAACATGGTGGACAGAGTATTGGCAAGCCACCTG GATTCCTGAGTGGGAGTTTGTTAATACCCCTCCTTTAGTGAAATTATGGTAC CAGTTAGAGAAAGAACCCATAGTAGGAGCAGAAACCTTCTATGTAGATGGG GCAGCTAACAGGGAGACTAAATTAGGAAAAGCAGGATATGTTACTAACAAA GGAAGACAAAAGGTTGTCCCCCTAACTAACACAACAAATCAGAAAACTCAGT TACAAGCAATTTATCTAGCTTTGCAGGATTCAGGATTAGAAGTAAACATAGTA ACAGACTCACAATATGCATTAGGAATCATTCAAGCACAACCAGATAAAAGTG

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AATCAGAGTTAGTCAATCAAATAATAGAGCAGTTAATAAAAAAGGAAAAGGT CTATCTGGCATGGGTACCAGCACACAAAGGAATTGGAGGAAATGAACAAGT AGATAAATTAGTCAGTGCTGGAATCAGGAAAATACTATTTTTAGATGGAATA GATAAGGCCCAAGATGAACATTAG Moss et al.

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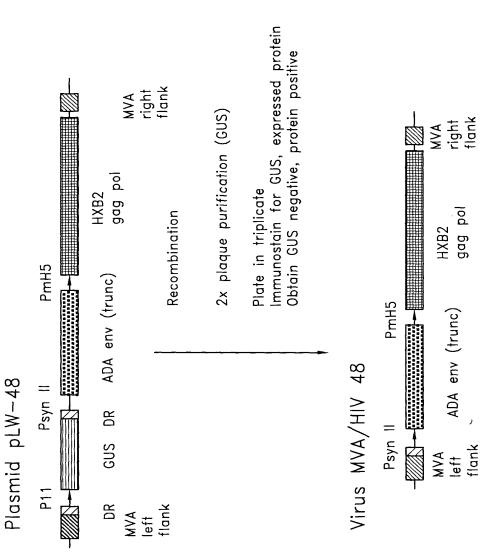
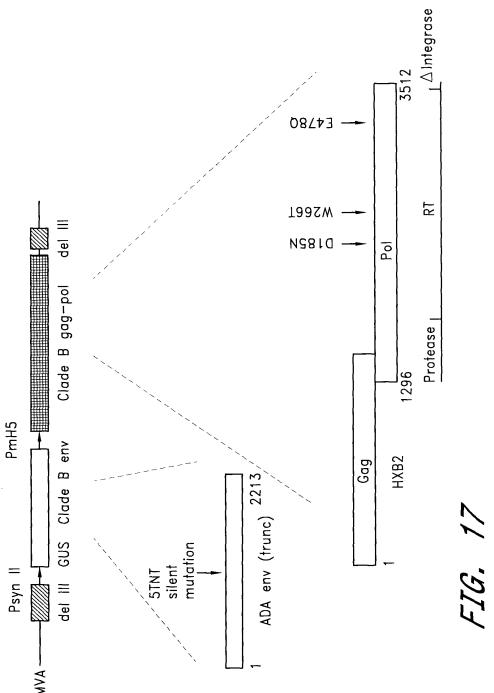


FIG. 16

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Early part of promoter

Sequence of new Psyn II promoter:

Critical region

Early start site

TAAAAAATGAAAAAATATTCTAATTTATAGGACGGT

Late part of promoter

ITTGATTTTCTTTTTCTATGCTATAAATAATA